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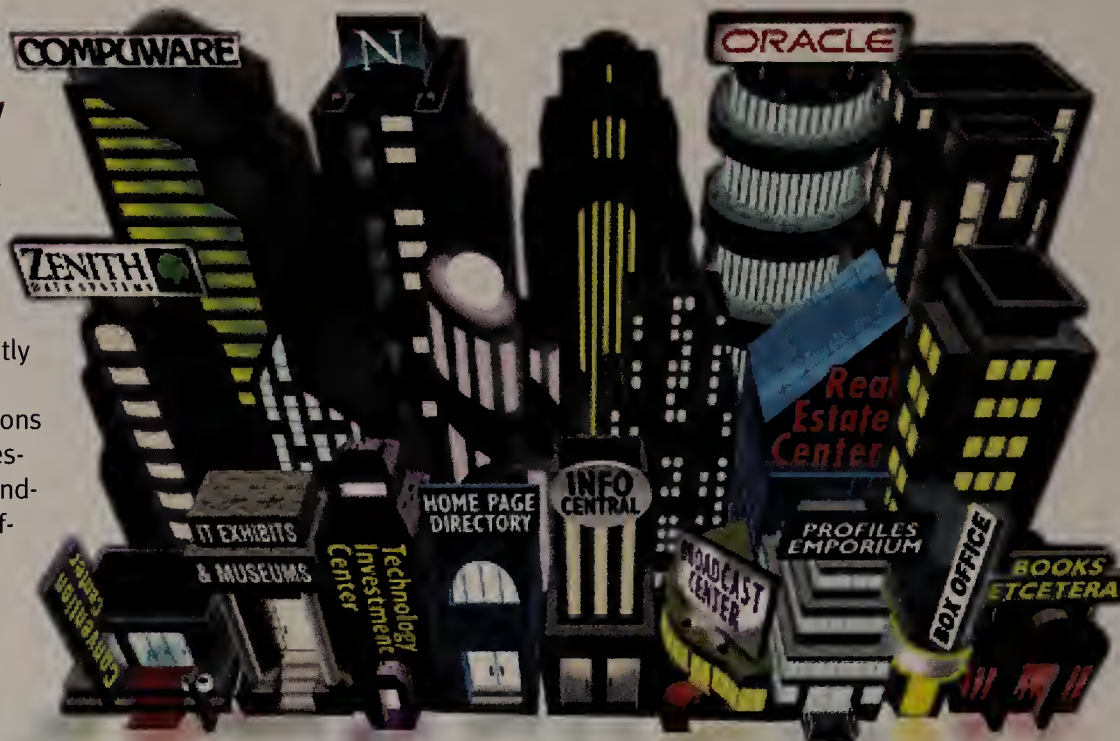


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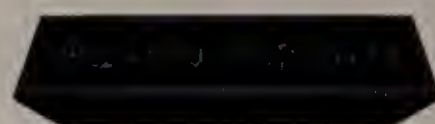
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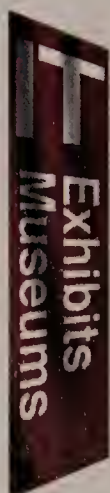
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A great place to put technological developments into perspective.



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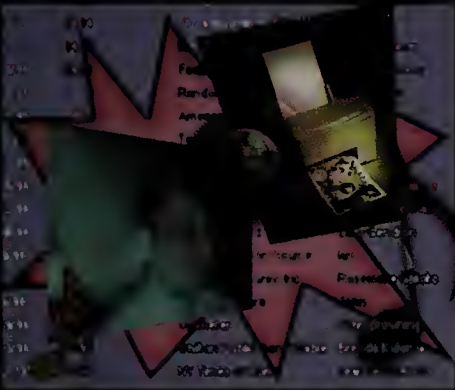


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COMPUTERWORLD



Winning users' hearts

ORACLE 7.1 ENTERPRISE SERVER IS FAR AHEAD OF THE COMPETITION IN A CUSTOMER SATISFACTION SHOWDOWN WITH OTHER DBMS PACKAGES. SEE BUYER'S GUIDE, PAGE 92.

Percent of 50 users who rated their overall satisfaction as "very good"

ORACLE 7.1 ENTERPRISE SERVER	56%
IBM DB2/2	36%
MICROSOFT SQL SERVER	28%
SYBASE SQL SERVER	27%

Desktops hit disk barrier

By Bob Francis

Limitations in most desktop operating systems and PC hardware are becoming painfully obvious to IS managers as users switch to high-powered PCs bulked up with disk drives larger than 2G bytes. The issue is just one more factor encouraging corporations to take a closer look at Microsoft Corp.'s 32-bit Windows NT.

A few vendors, such as Dell Computer Corp. in Austin, Texas, and Compaq Computer Corp. in Houston, are shipping systems with the large disk drives as standard equipment. And more are expected to follow suit by year's end.

The issue for information systems is that the

Disk barrier, page 127

Thin clients ablaze

Moving app burden to Web servers will cut costs

By Frank Hayes

Can a diet of Java help slim down fat client/server applications? That's what users are hoping for as major application tool vendors begin to roll out support for the World Wide Web and Sun Microsystems, Inc.'s Java Internet programming language.

Oracle Corp. this week will unveil plans to let developers use its Designer 2000 and Developer 2000 tool sets to build applications in Java by the end of the year. And Microsoft Corp. and Powersoft Corp. plan to

add similar features to their popular development tools by year's end.

That's an appetizing menu for client/server developers, who use popular tools such as Microsoft's Visual Basic, Powersoft's PowerBuilder and Developer 2000 to build applications that require ever-larger PCs on the desktop.

Corporate developers hope the new tools will let them write applications that reside mostly on servers. Only a small client program — written in Java and running on a

Thin clients, page 16

Oracle's "to do" list for the World Wide Web

✓ April: Generate code for Oracle Web server

June: Embed PowerBrowser in applications

December: Generate Java applications

NT users tempt fate with Registry Editor

By Laura DiDio

"Warning: Using Registry Editor incorrectly can cause systemwide problems and may require you to re-install Windows NT to correct them. Microsoft cannot guarantee that any problems resulting from the use of the Registry Editor can be solved. Use this tool at your own risk."

Forewarned is forearmed, right?

Not for some Microsoft Corp. Windows NT Server users who are blithely ignoring the warnings. They

are using the Registry Editor tool to change their network configurations without proper preparation or training. Invariably, they suffer the consequences: severe system crashes that render Windows NT servers and workstations useless.

The Registry Editor is arguably one of the most powerful and potentially dangerous tools included in Windows NT; it is critical to fine-tuning and controlling NT servers and workstations.

Registry Editor, page 127

Distributed management tames nets

By Patrick Dryden

Beta users of two recently updated network management platforms are coping with runaway network growth by adding more distributed servers to handle the load.

Several early users of Hewlett-Packard Co.'s OpenView and Cabletron Systems, Inc.'s Spectrum products last week said the problems of rapidly expanding networks are multiplying faster than the resources to manage them.



Delmarva Power's John Scoggin: 'Our single Spectrum server is starting to hyperventilate, and all our management traffic is funneling through one data center'

User worries

Chief among their concerns:

- Management databases are swelling, which slows performance and forces continual server upgrades.
- Polling traffic is rising, so precious bandwidth is being consumed to manage the network instead of handling business transactions.
- Console complexity is multiplying, which overwhelms operators.

The solution turns out to be a basic one: the more servers, the merrier the managers.

Indeed, monitoring all network information

Distributed management, page 16

IRS bright spot: Tele-filing winnows processing costs

By Stewart Deck



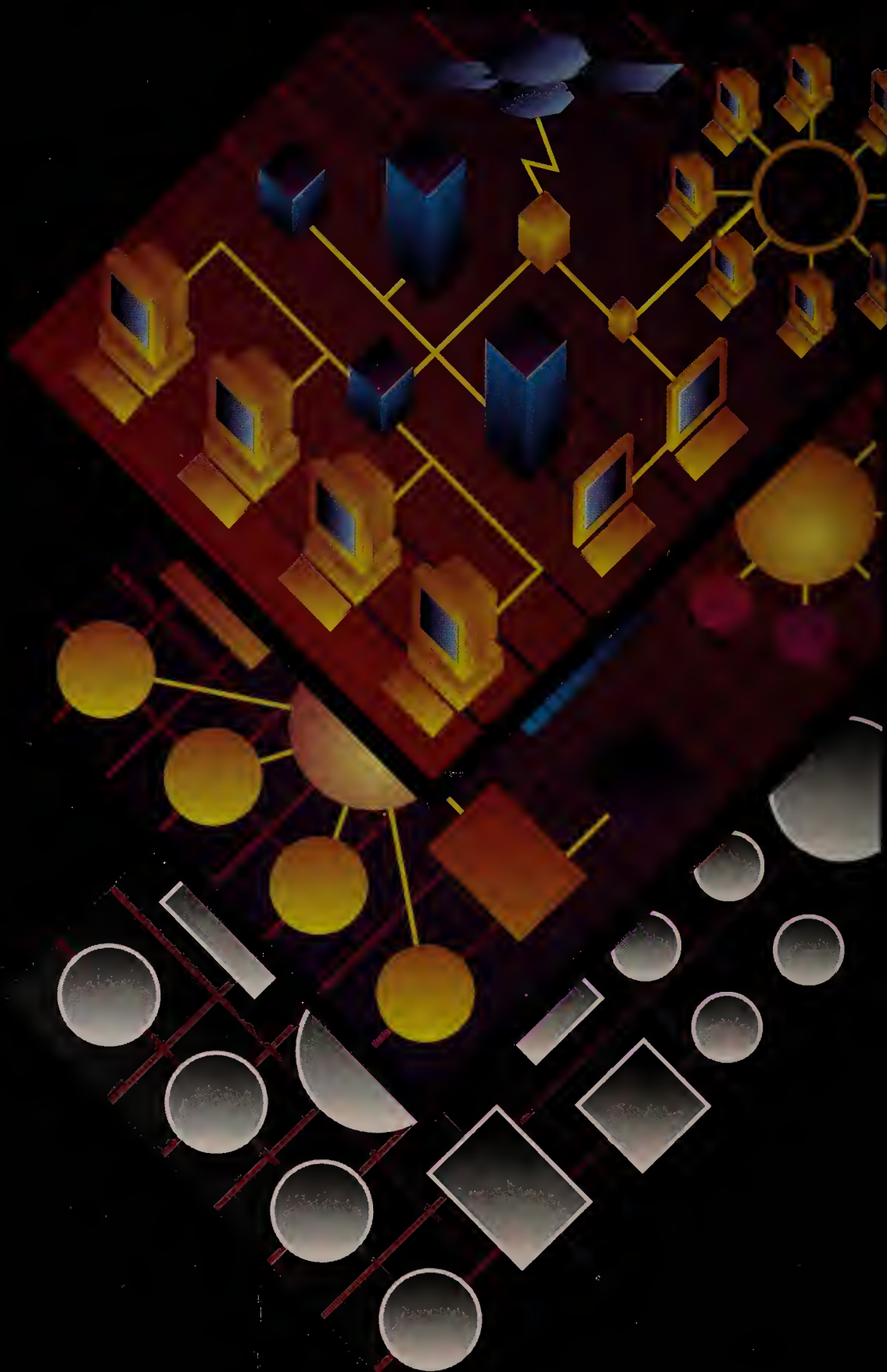
Ted Marinos was intrigued by the splashy, colorful packet he received from the Internal Revenue Service in January. It said the 26-year-old account executive at country music radio station WCYK in Charlottesville, Va., qualified to file his federal taxes by telephone.

"The process was surprisingly easy — it worked pretty well," said Marinos, one of the 2.6 million taxpayers who filed their federal income taxes this year by telephone.

Taxpayers who qualify for the brand-new Tele-File program use their telephone keypads to enter identification numbers and tax data into a distant Unix minicomputer.

IRS, page 14

**How Do You
Turn Your
Client/Server Mess...**



**...Into a Client/Server
Miracle?**



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Middleware, data warehousing and the Internet will dominate product announcements at DB/Expo, which convenes tomorrow.
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Paul Strassmann has the numbers to show the "computer paradox" is alive and festering.

Choice Cuts

Staffing for the Future: A Leadership Roundtable

Without a crystal ball, how can you foresee the skills your IS team will need in the future? Five IS leaders share their strategies.

• *Leadership Series* •
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Too much change! Too much money!

Companies are being forced to go outside for most IS training. The result: new roles for both internal and contract trainers.

Careers

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ROBIN JAREUX

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In Depth

netiquette /'ne-ti-ket/ n:
guidelines for proper
Internet behavior

Meet the 'net enforcers

If your posts are out of line, they can clue you in or drum you out. Page 103.



how many colors there are in the Apple logo?

The answer is in these pages! Now through May you can play COMPUTERWORLD's game of information retrieval — and turn trivia into treasure!

See page 48 for "everything you need to know to win!"

Client-Server Networking

**Welcome to the
Client-Server
family!**

**We
started
with a
revolutionary
idea...**

to build a software system that would really deliver client/server solutions rather than just add to the client/server mess.

We spent 2 years conducting extensive market research without trying to sell a single product.

We attended dozens of industry trade shows and conducted thousands of interviews, so that we could ask you — the **customer**:

- ◆ **What are your client/server needs?**
- ◆ **What are the biggest challenges you are facing?**
- ◆ **What do you like and dislike about the software you're using now?**

Then we analyzed your responses to these questions and combined them with our own expertise in delivering **real-world client/server solutions**, to design our radically successful first-generation product —

the **CS/7,000**

the first expert system-based client/server methodology and architectural tool in the world

— which was instantly adopted by the U.S. Department of State, the Illinois Credit Union, AT&T, Unisys, CNA Insurance, and many others.

**But we didn't
stop there.**

Instead, we continued interviewing thousands of people at trade shows and gathering feedback from our existing **customers** about how to improve the CS/7,000.

Six months later, in November of 1995, we launched our second product —

the **CS/8,000**

oriented toward providing workgroup-level solutions with more than twice the functionality of the CS/7,000

— which became a **runaway success** almost overnight. In the last 5 months we have sold the CS/8,000 to hundreds of corporate, military and government clients, including many of the Fortune 1000, the U.S. Air Force, the Department of Education, and the Federal Reserve Bank.

**Why has the CS/8,000
been so wildly
successful?**

To our knowledge, we are the only software vendor on the planet to provide all of this powerful functionality in a tightly integrated package:

- **INTELLIGENT QUESTIONNAIRES**
- **EXTENSIVE VIRTUAL METHODOLOGY**
- **GRAPHICAL CLIENT/SERVER ARCHITECTURES**
- **AUTOMATED PROJECT DOCUMENTATION**
- **COMPREHENSIVE PRODUCT SELECTOR**

**But
we didn't
let our success
go to our heads.**

Rather, we continued to conduct exhaustive market research and ask our existing and new clients what else they needed to help them **succeed** in the world of client/server.

Now the story continues with the introduction of our next-generation product —

the **CS/10,000**

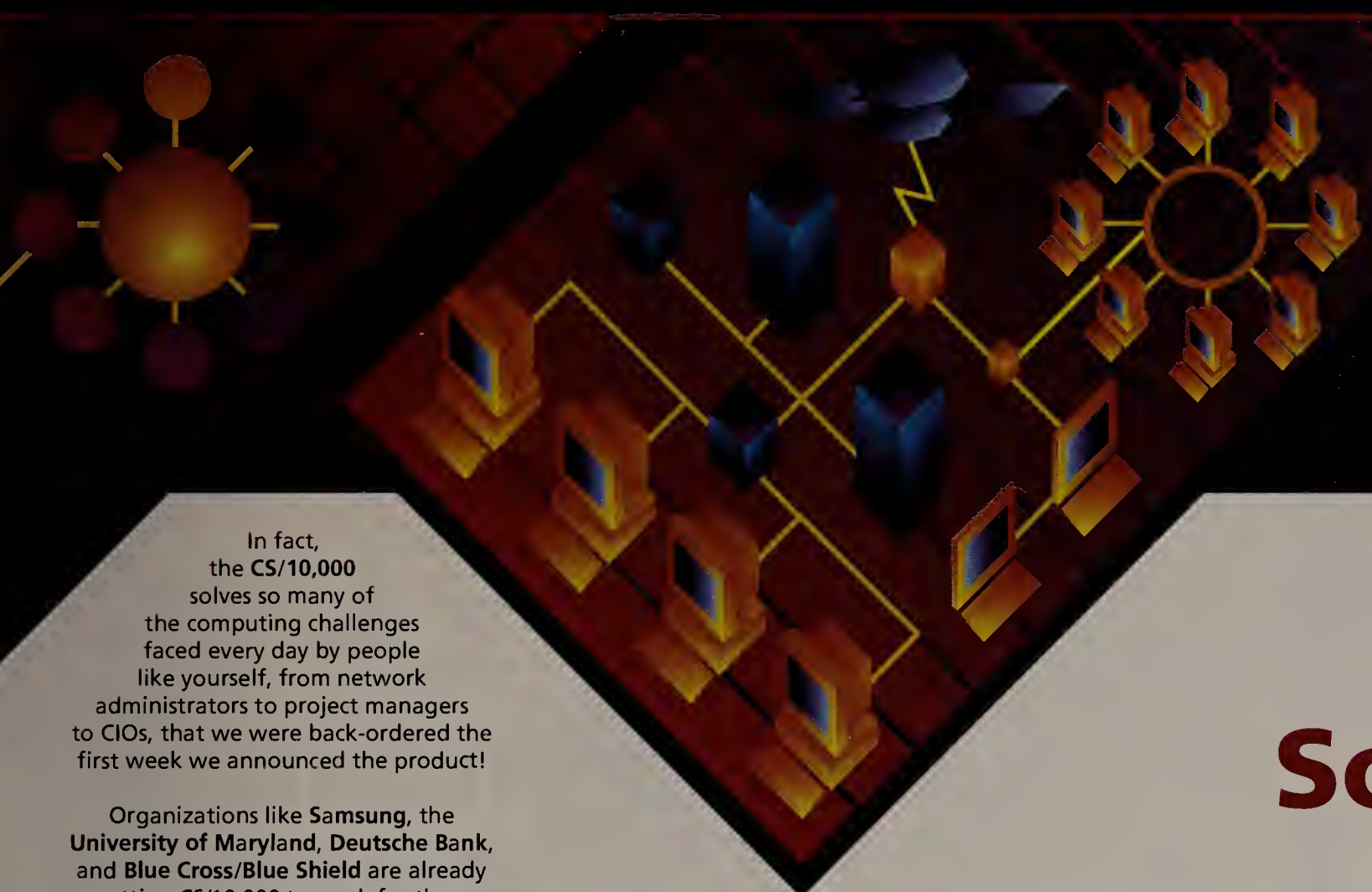
dedicated to providing larger scale solutions which can range from a single site all the way up to enterprise-wide systems

— destined to become the **ultimate** client/server design, planning and management tool for multinational corporations, government and military users at all levels.

The CS/10,000 adds these sophisticated features to the already potent problem-solving capabilities of the CS/8,000:

- **INTEGRATED SUITE OF EXPERT SYSTEM-BASED ADVISORS**
- **GRAPHICAL NETWORK ARCHITECTURES**
- **NEURAL NETWORK-BASED PROJECT ESTIMATOR**
- **SEAMLESS LINKS TO COMPREHENSIVE PRODUCTS REPOSITORY**

g Solutions, Of Course!



In fact, the CS/10,000 solves so many of the computing challenges faced every day by people like yourself, from network administrators to project managers to CIOs, that we were back-ordered the first week we announced the product!

Organizations like Samsung, the University of Maryland, Deutsche Bank, and Blue Cross/Blue Shield are already putting CS/10,000 to work for them to achieve rapid delivery of successful client/server and networking solutions.

But we weren't ready to take a vacation quite yet.

Instead, in the spirit of true *kaizen*, we decided to export the robust new technology we had developed for the CS/10,000 back into the CS/8,000.

So now we offer you two sophisticated and powerful tools —

the **CS/8,000** for workgroup and departmental-level solutions, and

the **CS/10,000** for larger projects scaling up to enterprise-wide solutions

— both priced significantly lower than other competitive product.

How can we offer you so much **cutting-edge** technology for 1/3 to 1/2 the price of the competition?

Because we have built an efficient operation without a lot of expensive middle management and fancy offices, so we can and do pass our savings on to our customers.

(By the way, watch out for our upcoming **next-generation** product, the CS/12,000, which we will be launching at Comdex this year. We can't say too much yet, but it will introduce the first AI-driven virtual network architectures, among other things. We promise it will be unlike anything the computing world has ever seen...)

So if you would like to witness computer science history in the making, please come join us at

DB Expo
April 16 - 18
at the San Francisco
Moscone Convention Center
Booth #612.

We'll be launching the CS/10,000, soon to be the premier tool for providing medium to large-scale client/server and networking solutions, as well as the next-generation version of the CS/8,000, for workgroup and departmental-level solutions.

Or, if you're unable to attend the show, please contact us to request free product literature for the CS/8,000 and CS/10,000, in addition to glowing industry reviews and accolades for the entire CS family of products.

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CS/8,000™

CS/10,000™

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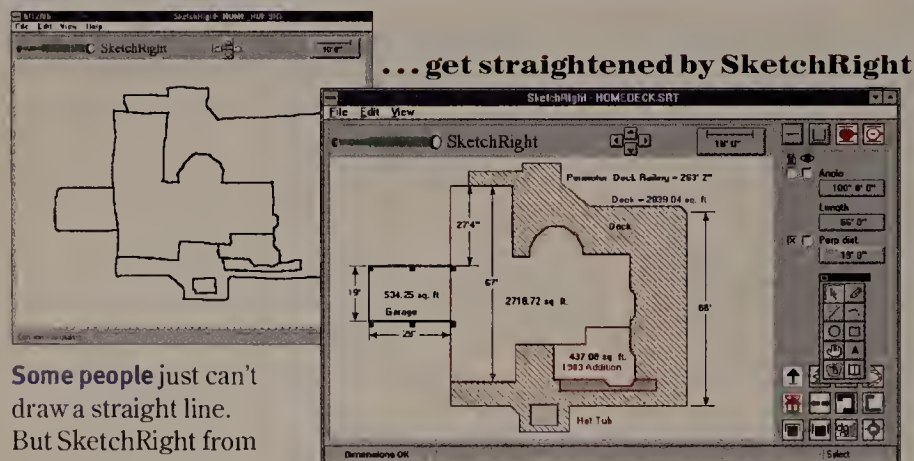
Internet culture and netiquette

The following is a list of things you shouldn't do — repeat, should not do — when making Usenet (or other on-line) posts (original author unknown):

- Put four addresses, five lines of "geek code," six ASCII-art bicycles, a Pretty Good Privacy encryption key and your home telephone number in your signature.
- Determine a perversion so bizarre or obscure that it doesn't have its own alt.sex newsgroup yet.
- Start this week's America Online virus rumor.
- Format your posts for 90 columns (or 20).
- Fill that empty electronic mailbox, make new friends, delight your postmaster and selflessly lead others to riches with a few "Make Money Fast" posts.
- Cross-post Amiga articles to the Macintosh and PC newsgroups for a valuable interchange of provocative ideas.
- Correct every spelling mistake you encounter, but misspell the word "imbecile" in your follow-up flames.
- Ask Austrian readers about kangaroos. Ask Australian readers about alpine skiing.
- Make an anonymous post that accuses others of cowardice.

For the artistically challenged

Sketches such as this...



Some people just can't draw a straight line. But SketchRight from Saltire Software in

Beaverton, Ore., takes care of that problem. It uses a smart "geometry engine" that recognizes the lines, arcs and circles in a rough sketch and "snaps" them into a sort of blueprint. After you supply the correct measurements, the program adjusts the drawing to scale. The \$495 package is intended for field personnel — such as architects, estimators, inspectors, space planners, police, appraisers and engineers — who use a laptop or pen-based computer. The program works best with Leica's handheld distance meter, which uses a laser beam to take on-site measurements.

News to ponder

Penthouse magazine issued a press release that said recent audits show its World Wide Web site gets thousands of visits each day from employee browsers at IBM, Apple, AT&T, NASA and Hewlett-Packard.

A **Macintosh word processing package**, Nisus Writer, will let a user "undo" the last 32,767 things done, *The New York Times* reports.

Computer Aided Victim Identification, from CAV-ID Development Corp. in New York, is a PC program that matches dental records to help coroners identify disaster victims.

Preliminary results of an on-line survey show that 17% of 185 respondents exhibit signs of "Internet addiction," which is similar to compulsive gambling. The results are at <http://www.ccsnet.com/prep/palpal.html>.

Send contributions of offbeat news, lists and anecdotes to mbetts@cw.com.

COMPUTERWORLD APRIL 15, 1996 (<http://www.computerworld.com>)

News shorts

GE brings CIO to light

General Electric Co. named Gary M. Reiner as its first-ever corporate chief information officer last week.

The move is aimed at cross-pollinating technology across the company's 12 business units and improving customer services.

As vice president for corporate business development, Reiner, 41, spearheaded GE's quality improvement programs.

The dozen CIOs responsible for each of GE's business units will report to Reiner, who said he intends to help GE use technology to generate "top-line revenue opportunities."

Having a corporate CIO to oversee activities throughout its diversified operations makes sense for GE, which is trying to capitalize on the fast-growing services opportunities with its massive installed customer base, industry observers said.



GE's new CIO, Gary M. Reiner intends to target 'top-line revenue opportunities'

Are you tired of that laptop machine slipping off your lap? Keep that rascal in place with Velcro adhesive strips attached to the PC's underside and a leg-encircling lap strap. The Lap-trek, which costs \$14.95, is available from Connectec International in Modesto, Calif.

Digital Frontiers

The world is becoming a web of wired and wireless networks. But for mobile users, switching from wired to wireless and back is still a hassle; it means constantly logging on and off each network.

Mary G. Baker (at right), an assistant professor at Stanford University, wants to make such moving around a matter of software and protocols that are hidden from users. She calls the concept "continuous connectivity" and has developed a prototype called MosquitoNet.

For example, when Baker takes her laptop outside or to the library, she unhooks it from the Ethernet LAN connection in her office, but never loses contact with the LAN server. That's because the PC automatically switches to a cellular packet radio service. The switch occurs so seamlessly, she doesn't have to close or restart any applications. Users will always seem to be connected, she says, "because the software connects and disconnects under the covers."

The prototype uses a subset of the draft Internet Protocol Mobility Support specifications. Baker says more work is needed to help applications adapt to different network speeds and error rates. — Mitch Betts



Apple PC sales tumble

Sales of Apple Computer, Inc. PCs to corporate customers fell 24% in January and February, according to market research firm Computer Intelligence InfoCorp.

Apple has already said it expects to post a loss of more than \$700 million in the first quarter of 1996 due to excess inventory and declining demand.

Prodigy cuts staff by 17%

Running a distant third in the on-line race, Prodigy Services Co. last week said it is laying off 115 of its 680 employees, mostly from company headquarters in White Plains, N.Y.

Prodigy officials said the cuts are primarily in areas that the company no longer needs as it shifts to an Internet-based service. It is rewriting many of its premium offerings in hypertext programming language so they can be accessed through a World Wide Web format, a cheaper and easier delivery system than the current mode.

Some analysts speculate the cuts may also be designed to boost profits to attract investors. Prodigy is jointly owned by IBM and Sears, Roebuck and Co., but Sears has been searching for a buyer to take over its half of the investment. Prodigy management is reportedly trying to buy the company.

Internet ignorance index

The percentage of consumers from five countries who say they have never heard of the Internet



Base: 1,300 respondents (Germany), 1,000 (France), 730 (Netherlands), 518 (Sweden), 1,011 (U.S.)

Source: International Research Institutes, Brussels



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Above all else, the Unisys Travel Partner Pro is one high-performance notebook computer.

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UNISYS

The Information Management Company

Baan does it your way

Automatic configuration tools build unique applications

By Julia King

Up-and-comer Baan Co. will leapfrog the competition next week when it announces tools that automatically configure enterprise software to a customer's unique way of doing business.

The company confirmed that the new version of its Triton software — renamed Baan 4.0 — also includes a graphical user interface and a project management application aimed at manufacturers of complex, one-of-a-kind products such as a nuclear power generator.

But from all indications, it is Baan's new set of automatic configuration tools, called Orgware, that promise to steal the show at next week's user conference in Orlando, Fla.

If the tools work as well in the real world as they did in demonstrations, Orgware could cut system configuration times by up to 50%, users and analysts said.

"Orgware allows you to sepa-

rate the business processes out from the software product," said Hal Kaiser, an independent contractor at Nortel, Inc., a Baan site in Toronto.

"In earlier releases, you had to flip all of these toggle switches in the software, which required someone with intensive software knowledge," Kaiser said.

"What's nice about Orgware is I don't have to hire that expertise anymore," he added.

Manufacturing software

Another Baan user, John Jendricks, chief information officer at Stratacom, Inc. in San Jose, Calif., said Orgware was one of the main reasons his company bought Baan software over SAP's R/3 enterprise system.

"Baan and Orgware will allow us to change the fastest with the least amount of time, people and effort," Jendricks said.

Essentially a modeling tool, Orgware lets nontechnology users lay out a set of business processes in Baan software. It then automatically configures itself to

the rules specified.

Baan "is helping people deal with the whole problem of configuration and documentation of business processes," said Chris Jones, an analyst at Gartner Group, Inc. in Stamford, Conn.

First of its kind

In the absence of automatic configuration tools, all enterprise software users "have had to bounce their way through the arcane way a product is architected, rather than concentrating on their business," he said.

Baan is the first vendor to resolve that issue, Jones said.

In the next year or so, analysts said they expect several other vendors, notably SAP AG, to come out with similar configuration tools. But for now, Baan definitely has a jump on the competition.

"Right now, SAP is at least a year from being able to do the same thing, which is another reason we think Baan's upcoming announcement is pretty significant," said Jack Maynard, an analyst at Aberdeen Group, Inc. in Boston.

DEC touts messaging middleware

By Craig Stedman

In danger of being steamrolled by IBM in the messaging middleware market, Digital Equipment Corp. this week will try to raise the profile of its almost-secret DECmessageQ product.

Digital is introducing a version of DECmessageQ that includes an add-on mainframe client and optional bridging software that can pass data between DECmessageQ and MQSeries middleware from rival IBM.

The advent of Version 3.2 also marks the beginning of a more overt marketing push for DECmessageQ, Digital officials said. The product has been mostly hidden from public view over the past year, while IBM has been flogging MQSeries for all it's worth.

Messaging middleware lets applications exchange data via asynchronous connections and store-and-forward queues.

Even committed DECmessageQ customers said they have noticed the silence from Digital.

"They haven't marketed DECmessageQ like they've marketed their Alpha hardware," said Cole Young, director of systems and development at The Potomac Group, Inc. in Nashville.

The Potomac Group, which provides medical insurance verification services to hospitals and physicians in 22 states, uses DECmessageQ to route eligibility data among programs on a network of four servers and 10 front-end boxes that run Windows NT.

DECmessageQ has been available longer, but IBM recently laid out plans to link MQSeries to Notes, the Internet and SAP AG's R/3 client/server software.

By contrast, DECmessageQ has been "underground," said Sally Cusack, an analyst at The Standish Group International, Inc. in Dennis, Mass.

DECmessageQ is considered faster because it uses a bus architecture; MQSeries takes a workflow-oriented approach, Cusack said. But MQSeries has more transaction processing features, she said. "It's sort of the Cadillac of asynchronous messaging."

The Potomac Group has no complaints about DECmessageQ on the speed front, Young said. Earlier this month, when three of the company's four Alpha-based servers crashed simultaneously, the verification system "didn't even breathe heavy," he said.

Meanwhile, Version 3.2 is supposed to have a friendlier user in-

Take a message

Worldwide revenue for enterprise application-to-application messaging software



Source: The Standish Group International, Inc., Dennis, Mass.

terface for administering and configuring middleware, Young said.

There are no plans to support mainframes as DECmessageQ servers, said Glen Macko, Digital's worldwide business manager for the product. Users doing mainframe-based messaging are likely to use MQSeries, he conceded. But Digital hopes the MVS client will position DECmessageQ for connecting mainframes to distributed networks.

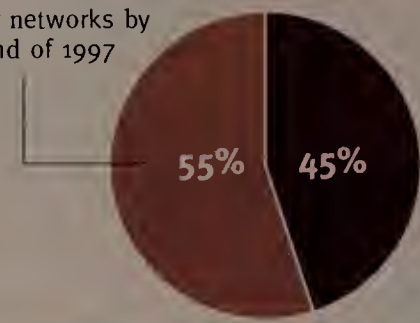
Version 3.2 is available now; development licenses range from \$558 to \$12,955.

Virtual LANs get real

Many users once believed the benefits of virtual LANs weren't worth the complex setup, but things are beginning to change

What are your plans for virtual LANs?

Will use virtual LANs in our networks by the end of 1997



Base: 130 IS professionals

Source: Infonetics Research, Inc., San Jose, Calif.

IBM, Bay and 3Com join to draw virtual LAN plan

By Bob Wallace

IBM, Bay Networks, Inc. and 3Com Corp. will develop a unified plan for virtual LANs (VLAN), a move that could bring users the heavily hyped technology much earlier than expected, *Computerworld* has learned.

Dubbed Trio, the initiative will shoot for a common scheme for supporting VLANs, which let users create logical LANs.

Analysts said the Trio standard could produce a de facto industry VLAN standard, possibly this year, whereas a VLAN specification backed by Cisco Systems, Inc. may not be hammered out until at least mid-1997.

If Trio is nailed down this year, products could begin to flow early next year. In a recent user survey, more than half the respondents said they plan to deploy VLANs by the end of 1997 (see chart). But that was before Trio.

Users were enthusiastic. "Having these three heavy hitters working together on VLANs makes me much more confident that we'll see interoperability sooner and will serve as an impetus to get users involved in deploying VLANs," said Bill Horst, chief of the General Services Administration's communications branch in Philadelphia, which is a large Bay customer.

"Concerns about interoperability have many users worried, though it sounds like that issue may disappear for Trio. VLANs can make life easier for us," he added.

VLAN technology was designed to enable information systems managers to automate the creation of workgroups, eliminating the need to physically move and recable stations. A drag-and-

drop graphical network management package would allow IS managers to perform moves, adds and changes automatically.

For example, an IS manager could create one VLAN for finance, one for engineering and one for manufacturing. And a user could participate in many VLANs, if needed.

Together at last

Other users are excited about the alliance, as well. "This would be great because you'd have the major players on the same playing field, which would make for less headaches through a better-mixed vendor environment," said Tom Balzarini, enterprise network manager at Associated Grocers, Inc. in Seattle, which uses Bay, 3Com and Cisco equipment.

"We've looked at what Cisco has been doing, but we have a broader mix of vendors and need to have everything tied together," he added.

After deciding on a common and interoperable VLAN approach, Trio will address network management issues, sources said. One said, "Deciding on a management strategy and direction is critical since you can't do much with VLANs if you can't configure and change them."

Horst agreed. "With an adapter provider of 3Com's stature in this alliance, it sounds as if Trio would enable users to manage VLANs down from the backbone and workgroup switches to the network interface card. That's excellent reach."

Trio will be formally announced in 30 to 60 days.

 **IBM and Tivoli give systems management a new direction.** See page 67.

Oracle7 Parallel Server: Still Unparalleled.

Key Features	Oracle7	~~Sybase~~ ~~System 10~~ <i>SQL Server II</i>
Parallel Processing Strategy	☒	☒
Parallel Processing Slideshow	☒	☒
Fault Tolerant Parallel Server (Clusters)	☒	☐
Parallel Query Software	☒	☐
Parallel Index Software	☒	☐
Parallel Recovery Software	☒	☐
Platforms Supported with Above Parallel Features	20+	None

Sybase may have changed the name of their database, but they didn't change its "parallel nothing" architecture. Oracle7's parallel everything database architecture makes open system computers faster and more reliable than mainframes. Call Oracle for the software, 1-800-633-1071, ext. 8110. Call Sybase for the slideshow, but please, call one at a time.

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Compaq powers up push for portables lead

By Mindy Blodgett

Compaq Computer Corp., hoping to regain its position at the head of the portables pack, plans a major release of new low-end notebooks and ultraportables in time for PC Expo in June.

But stiff competition will come from several sides. For example, Armonk, N.Y.-based IBM PC Co. in June will release ultrathin notebooks and laptops that cost less than \$2,000, according to sources close to the company.

Smaller makers such as Texas Instruments, Inc. in Dallas are plotting to steal sales from No. 2 Compaq and the clear notebook leader, Toshiba America Information Systems, Inc. in Irvine, Calif.

Product surge

"June and PC Expo is just going to be amazing," said William Ablondi, an analyst at Giga Information Group in Cambridge, Mass. "All the vendors will have ultrathin, ultralight notebooks, and that

Features of TI's Extensa 570CD:

- 100-MHz Pentium
- 8M bytes of memory, expandable to 40M bytes
- 810M bytes of removable hard disk
- 6.4 pounds
- Modular floppy drive, battery and CD-ROM



market is expected to take off."

"Compaq is going to try to restate their capabilities and maintain their position as a top-tier vendor with their releases," he said.

Industry analysts said Compaq in Houston plans to release the following LTE notebooks in June: a high-end notebook with a 133-MHz chip and a 12.1-in. screen, which will cost about \$5,000; an ultraportable with a 100- or 120-MHz chip and an 11.8-in. screen, which will cost about \$2,500; and a notebook with a 90-MHz chip,

which will cost less than \$2,000.

Buyers soon will be able to choose from a cornucopia of relatively inexpensive notebooks with high-end features, including chip speeds of 100 MHz or more.

The lighter models will join the already-released HiNote Ultra II from Digital Equipment Corp. in Maynard, Mass.

Users said they eagerly await the lighter and less-expensive notebooks.

"Some of these notebooks get heavy as you run through air-

ports," said Stephen Wittner, a network manager at Centex Group, Inc. in Dallas and an IBM ThinkPad user.

"I'll be interested to try out the lighter models. And, of course, the cheaper the better," he said.

Rival in sight

"The 100-MHz chip is pretty much standard now on midrange and even low-end notebooks," said Ray Toves, a senior product marketing manager at TI.

The company has firmly stated its aim to knock Toshiba from its spot at No. 1 within a couple of years.

In the meantime, Toves said TI believes it has the right products and pricing to pick off Compaq or IBM.

Analysts said TI has gained market

share and mind share in the past year, but it still has its work cut out in chasing the market leaders.

"Texas Instruments has always had great products, but they have had trouble with marketing," said Andrew Seybold, editor of the "Outlook on Communications and Computing" newsletter in Boulder Creek, Colo.

"And Compaq is planning to release notebooks with everything for everyone," he said.

Not-so-slim shipments

Giga Information Group, Inc. predicted that 475,000 to 490,000 slim and light notebooks will ship this year. Next year, shipments of the ultraportables will more than double and exceed 1 million units, Giga predicted.

TI this week will release a midrange line of Extensa 570CD and 570CDT notebooks.

They will cost between \$2,999 and \$3,999.

Motorola has updated its Envoy personal digital assistant. But does anyone care? See page 70.

Internet products to invade DB/Expo

By Dan Richman and Juan Carlos Perez

Middleware, data warehousing and the Internet will dominate product announcements at DB/Expo '96, tomorrow through Friday at the Moscone Center in San Francisco.

Sarvesh Mathur, a development manager at **Virtual Integration Technologies, Inc.** in Cupertino, Calif., will be among the estimated 35,000 attendees. Like many of his colleagues, he will look for a range of products, "especially development environments for creating applications for the Internet or intranets," Mathur said last week.

"We're still hand-coding without a [graphical user interface] or a debugger, because the market has been slow to evolve. Now, a lot of Internet products are emerging," he said.

Products for Web

One such product, Sapphire/Web 2.0 from **Bluestone, Inc.** in Mount Laurel, N.J., will be previewed at DB/Expo. It features support for Microsoft Corp.'s Open Database Connectivity (ODBC) and OLE 2.0 application programming interfaces (API).

Several other Internet-related products also will be announced at the show, which is the pre-

eminent database event of the year.

Issaquah, Wash.-based **Raima Corp.** will announce Velocis Web Server Gateway, which provides a shrink-wrapped Common Gateway Interface (CGI) link between Hypertext Markup Language servers and the Velocis Database Server. The gateway will cost \$995; the database server lists for \$1,995 for eight users.

Arbor Software Corp. in Sunnyvale, Calif., will announce Essbase Web Gateway, a \$10,000 connection that will let Internet visitors perform on-line analytical processing from Web browsers via the Essbase database management system.

Bargain-hunting World Wide Web site operators may want to snap up a free copy of Tecumseh Scout, a Web search engine from start-up **Tippecanoe Systems, Inc.** in Pleasanton, Calif. Tecumseh helps create a searchable index of up to 4,000 documents by reading and indexing every word in the documents. It lets Web browsers search the index through a CGI program.

Tippecanoe officials said they hope the free publicity will lead to sales of the firm's heavier-duty products; the banner "Search re-

sults provided by Tecumseh" appears each time the product is used, unless the Web site operator shuts it off.

In the realm of middleware, which glues vendors' clients to other vendors' servers or database management systems, **Sybase, Inc.** in Emeryville, Calif., will announce Version 2.0 of Enterprise Connect. It will support multitier application development, said Karen Parker, a marketing director at Sybase.

Trilogy Technology International, Inc. in City of Industry, Calif., will announce its Open-Path Remote Data Access ODBC driver. Company officials said the product costs \$850 and uses a single driver to let developers connect Windows and Unix front ends with a variety of relational database management systems.

Also set for introduction is Version 2.2 of **Platinum Technology, Inc.**'s InfoPump data-replication tool. The tool will cost \$35,000. It will support Lotus Notes 4.0 and will run under Sun's SPARC Solaris and Hewlett-Packard's HP-UX. Version 2.0 of InfoHub, a \$55,000 piece of middleware that lets RDBMS users query nonrelational data, now

supports IBM's Distributed Relational Database Architecture API and no longer requires the use of Sybase gateways.

Software AG in Reston, Va., will address an increasingly hot area, data marts. The company will announce Dmart, which combines its Esperanto query tool, the Adabas D RDBMS and consulting and educational services to deliver a data mart in four to six weeks. It will cost \$25,000. Data marts are collections of data about single topics or single products, usually implemented by midlevel personnel.

Information Discovery, Inc. in Los Angeles will announce the unusual Map Discovery System, which claims to bring data mining to mapping software. Users could discover unsuspected geographic patterns. For example, if the inputs are a database of warranty claims for a given make and model car and a database of weather for the past five years, Map Discovery System will generate maps that show significant correlations, such as which parts need replacement most often in areas that receive the most snow. Map Discovery System will cost \$1,900 for Windows and \$25,000 for Unix.

Easing the royal pain of linking databases to the Web. See page 75.

Rivals target 'net security

By Gary H. Anthes

In an effort to consolidate competing standards, Microsoft Corp. and Internet rival Netscape Communications Corp. plan to develop a single, full-featured security protocol for 'net communications.

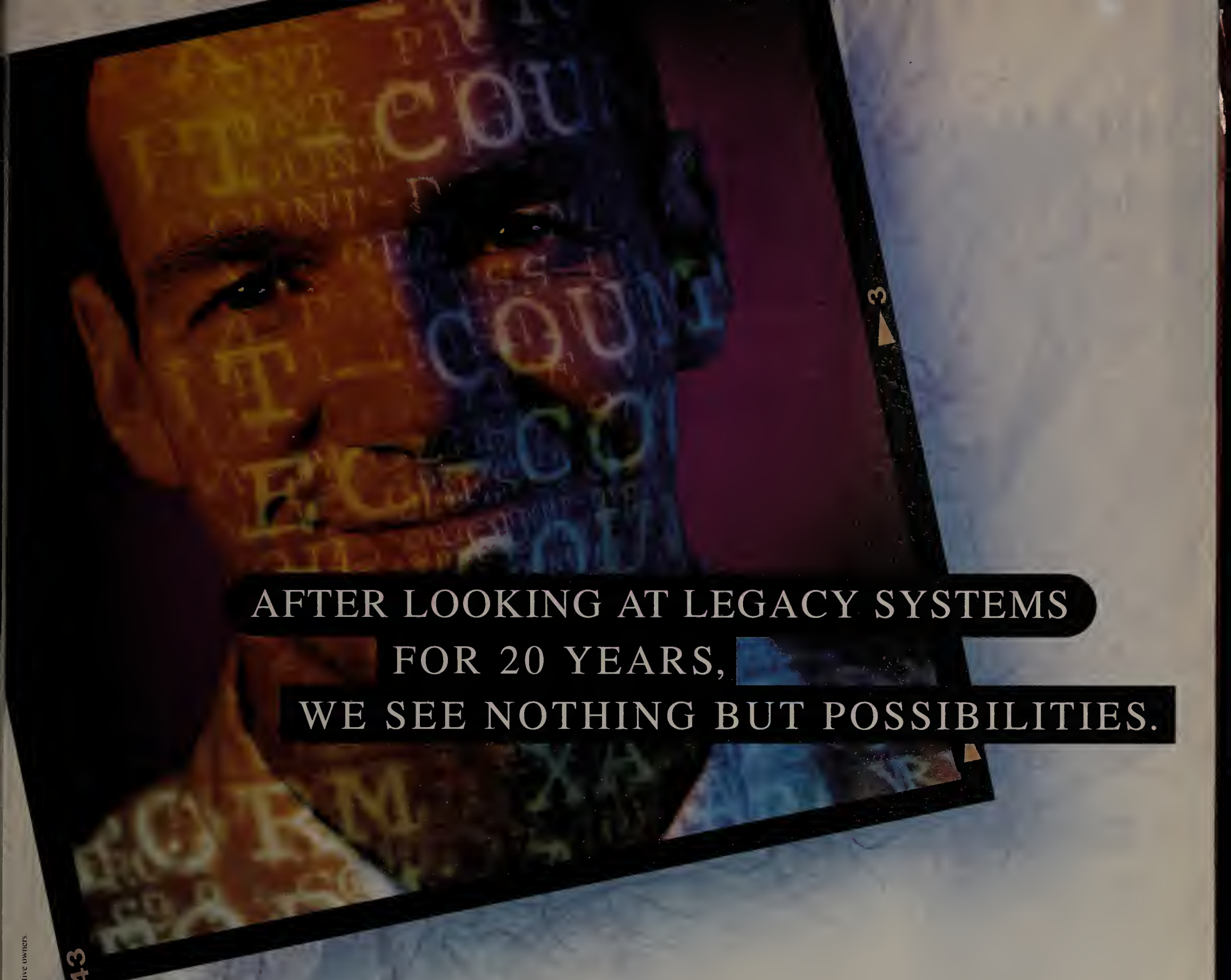
Microsoft last week submitted a draft specification for an encryption protocol to the Internet Engineering Task Force. Called Secure Transport Layer Protocol, it would combine the security features in Microsoft's Private Communications Technology 2.0 with the widely used Secure Sockets Layer (SSL) 3.0 featured in Netscape's Navigator browser.

The result would be a more robust and scalable SSL-compatible standard that provides better security, Microsoft officials said.

It's meant to be widely used for user authentication and privacy in commercial applications, such as those that transmit electronic mail or credit-card information.

Users said the Microsoft/Netscape effort will help simplify Internet commerce. "There are quite a few standards out there, and it would be nice to have just one or two to deal with," said Carl Tianen, manager of research and development at Ameritech Security Services in Southfield, Mich.





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OLAP software products deliver smoother sailing

Pilot Software promises to make quick work of bulky data

By Dan Richman

Multidimensional database management systems are useful tools for drilling through layers of complex, detailed data. But that high degree of detail comes at a price: time-consuming behind-the-scenes work.

Add to that another downside: The database that results from all that work can end up far larger than the data from which it is derived. That creates storage problems.

Enter Pilot Software, Inc., which today will announce a family of on-line analytical processing (OLAP) client/server products. Pilot claims this software will let users load data faster — and create multidimensional databases faster and in less space — than earlier versions of its product.

Called Pilot Decision Support Suite, Version 5, the five-piece

package (see chart) uses new algorithms to reduce the time needed to load and process data so end users can access it, said John Fleming, Pilot's vice president of marketing. In-house unaudited benchmark tests showed time savings of 50% to 500%, he said.

One early user agreed that time

savings are clearly a benefit of the new version.

"Using Version 5,

loading the OLAP database takes three hours. It used to take five hours," said beta user Bob Morris, a corporate manager at heavy-equipment manufacturer Ingersoll-Rand, Inc. in Woodcliff Lake, N.J.

He said many files in the company's 4G-byte Pilot database, which is used to track sales, are 20% to 30% smaller when aggregated under Version 5.

Howard Dresdner, a senior analyst at Gartner Group, Inc. in Boston, said improvements in the

quality of Version 5 "make it a more worthy competitor" to other analytical software competitors such as Express from Oracle Corp. in Redwood Shores, Calif.; Holos from Holistic Systems, Inc. in Edison, N.J.; and Accumate from Kenan Technologies in Cambridge, Mass.

"Collecting data is great. Learning from it is another matter, and that's coming to matter more and more to companies. Software like this is what provides understanding, so it's very hot," Dresdner said.

Also new in Version 5 is the ability to group selected items, such as products, to examine only the data relevant to them. Morris said an Ingersoll product manager can now easily review sales of pneumatic hand tools without having to also sift through sales figures for air compressors and door hardware.

Earlier versions of Pilot required more effort to segregate

Inside Pilot Decision Support Suite Version 5	
PRODUCT	FUNCTION
Desktop	On-line analytical processing through built-in, single-user multidimensional DBMS
Analysis Server	Multiuser version of multidimensional DBMS
Designer	Designs, creates and debugs databases and applications
Analysis Library	Forecasts and performs analytical functions
Excel Add-In	Lets Microsoft's Excel access Pilot databases

sets of sales figures by product, he noted.

Cooperative application

The new version is more open. Support for Microsoft Corp.'s Open Database Connectivity (ODBC) application programming interface means any ODBC-compliant tool can be used with Decision Support Suite.

Also, support for Microsoft's OLE 2.0 means any of the hundreds of analytical, World Wide Web browser or graphics components can be integrated within Pilot applications, Fleming said.

The product's "new openness,

plus its speed and smaller size, advances the ball considerably" in the multidimensional database market, said Donald A. DePalma, a senior analyst at Forrester Research, Inc. in Cambridge, Mass.

Pilot Decision Support Suite, Version 5, lists for \$30,000 for five users. Its server component runs on machines running Unix and Microsoft's Windows NT. Its client portion runs under Windows 3.1, Windows 95 and Windows NT.

OLAP drives several Internet-based data warehousing projects. See page 81.

News Shorts

Microsoft axes CompuServe forums

Microsoft Corp. plans to discontinue its own technical support forums on CompuServe in favor of Usenet newsgroups. The groups, which will be activated today, will be free, the company said. April 20 is the last day for Microsoft-sponsored CompuServe forums. CompuServe, Inc. plans to offer some Microsoft forums, but after April 20, Microsoft won't run them. Users can access the new newsgroups at <http://www.microsoft.com/support/>.

Two firms dump NetView

Two companies have defected from the IBM camp when it comes to products that manage their complex SNA networks and MVS systems operations. Both Electrolux Corp. and Lockheed Martin Corp. switched from IBM's NetView for MVS to Solve:Netmaster from Dallas-based Sterling Software, Inc. to save money and gain new capabilities, officials from each company said last week.

Sybase suffers \$6.9M loss

As expected [CW, April 8], Sybase, Inc. last week posted a net loss of \$6.9 million, or 9 cents per share, for the quarter ended March 31. The relational database management system vendor generated revenue of \$243.7 million for the quarter, up 13% over the same quarter last year. With the elevation of Mitchell Kertzman to executive vice president of sales and marketing and the ouster of Chief Operating Officer Dave Peterschmidt, "the stage

is set for more aggressive sales and marketing," said CEO Mark B. Hoffman.

SGL's 3-D Web standard wins

Silicon Graphics, Inc.'s Moving Worlds technology was formally adopted as the specification for Version 2.0 of the Virtual Reality Modeling Language (VRML) by the multivendor VRML Architecture Group. First developed by SGI, VRML is a standard for creating three-dimensional applications on the World Wide Web. VRML 2.0 eliminates the static limitations of the first version of the specification by allowing the addition of animation, sound and other interactive features.

Wang buys 'Dataserv-ice'

Wang Laboratories, Inc. will acquire BellSouth Corp.'s Dataserv service company. Billerica, Mass.-based Wang will pay \$30 million for the Minneapolis company, which posted nearly \$100 mil-

lion in revenue last year.

Symantec upgrades compiler

Symantec Corp. in Cupertino, Calif., last week upgraded its C++ compiler for Apple Computer, Inc.'s Power Macintosh to support Java, Sun Microsystems, Inc.'s Internet development language. The new version, which is available now and costs \$399, includes a Java compiler and windowed development environment, along with support for developing in C++ and Pascal.

Unisys readies open server

Unisys Corp. is scheduled to unveil today its ClearPath family of enterprise servers, which are mainframes that can run other operating systems. The first of the servers will be available this month, with others following in May and June, the company said. The systems can run both mainframe operating systems and Unix or Windows NT, according to the Blue Bell, Pa., company.

Collabra upgrade ships

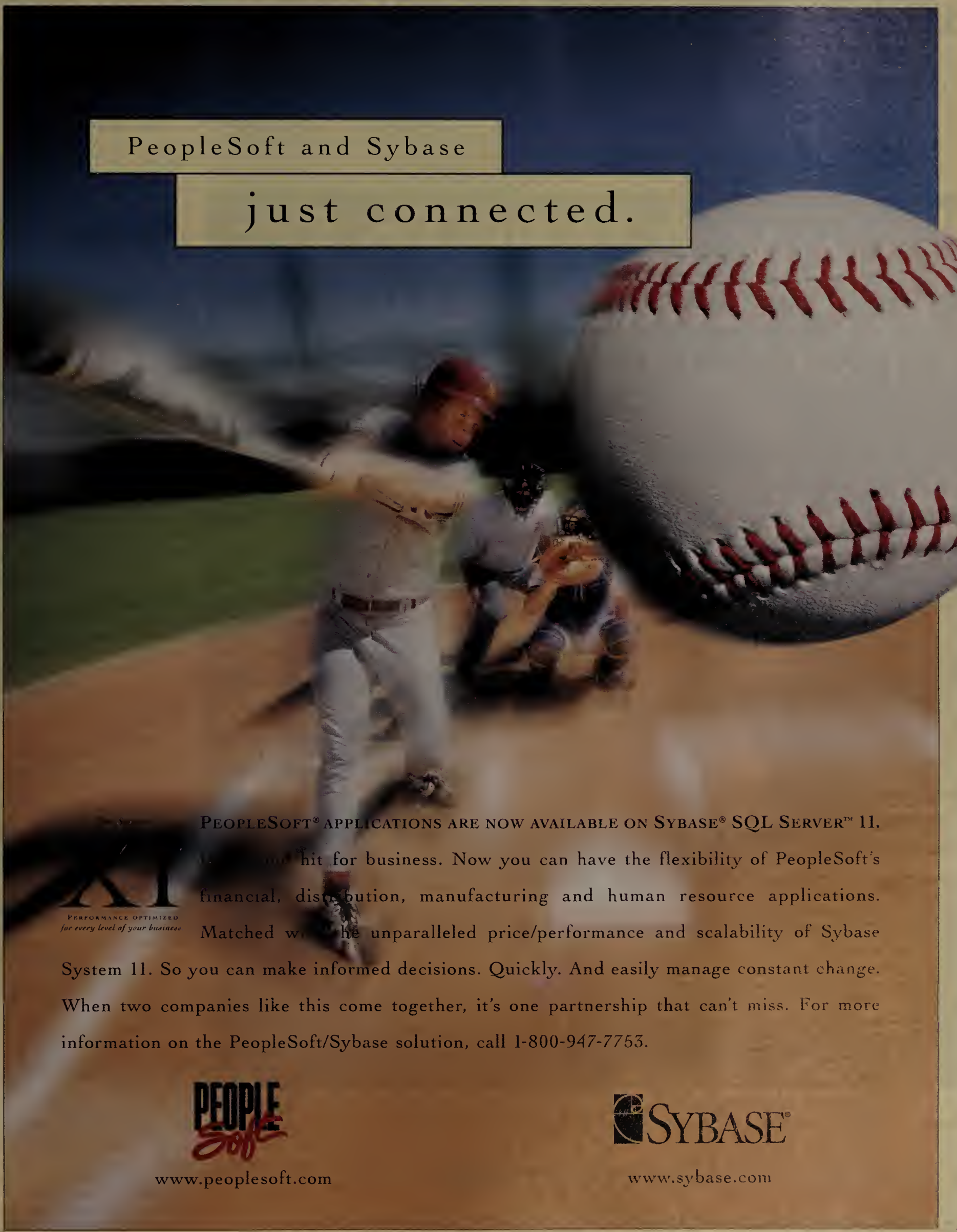
Mountain View, Calif.-based Netscape Communications Corp. shipped an upgrade to its Collabra Share groupware product last week. New in Release 2.2 is a replication feature that lets mobile users work with files off-line, then update them

when a network connection is available. Share 2.2 is free to Collabra users and costs \$49 per seat for new users.

IBM cuts PC server prices

IBM cut prices last week on both its PC Server 520 and 720 lines by up to 12%. The cuts follow price reductions of up to 24% made earlier this month on its PC Server 320 lines. IBM cut prices on a PC Server 520 powered by a 100-MHz Pentium from \$7,380 to \$6,459. A PC Server 720 powered by a 100-MHz Pentium processor went from \$12,499 to \$11,269.

SHORT TAKES Hayes Microcomputer Products, Inc. is emerging from Chapter 11 bankruptcy. The modem maker said a variety of investors plan to acquire a 49% stake in the company. Chairman Dennis Hayes and an employee stock plan will retain 51%. ... **Mastercard International, Inc.** awarded AT&T Solutions a multimillion-dollar contract to design, build and support a new global transaction processing network to support its global business activities. ... **Great Plains Software** in Fargo, N.D., this week will begin shipping Dynamics C/S, its suite of 32-bit client/server financial applications for Microsoft's BackOffice environments. Pricing for an eight-user software license is \$75,000.



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Fast Ethernet brings broadband to the desktop

By Bob Wallace

Users who are tired of hearing about emerging network technologies that are too costly or immature for them to use are turning to tried-and-true Fast Ethernet technology. Fast Ethernet offers 10 times

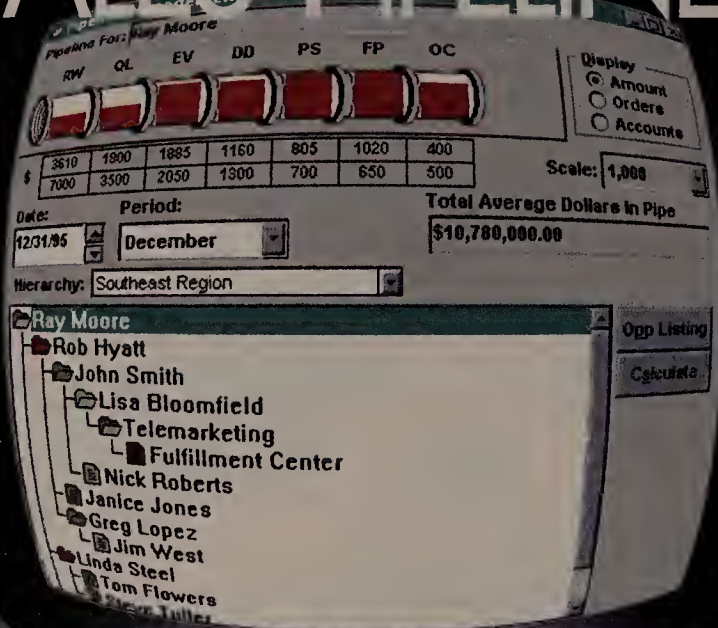
the bandwidth of regular Ethernet.

The tenfold boost in client/server performance is achieved with a 100M bit/sec. Fast Ethernet hub and a Fast Ethernet adapter for each server behind the hub. This lets network managers tie workgroup LANs to centralized servers.

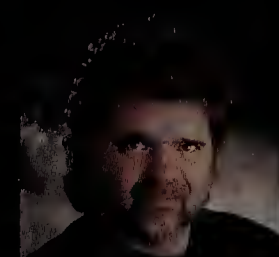
The Fast Ethernet hubs and adapters cost 20% to 50% more than 10M bit/sec. models. But they also give users a relatively inexpensive way to hedge their bets against future technologies — such as Asynchronous Transfer Mode (ATM) — without precluding them.

"We had a network with 200 nodes, and we had some real bottlenecks on some of the four LAN segments," recalled Mark Maxwell, vice president of global systems management at Fuji Capital Markets Corp. in New York. "We thought about ATM a little, but it isn't ready for prime time yet."

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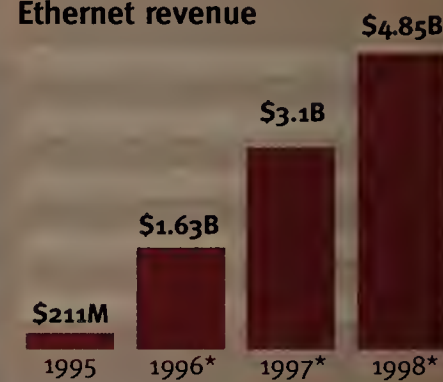
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PLATINUM technology

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Worldwide Fast Ethernet revenue



*Projected

Source: Dell'Oro Group, Menlo Park, Calif.

Besides, we like to stay away from technology revolutions and stick with technology evolutions."

Maxwell installed a Cisco Systems, Inc. Catalyst 5000 switch, which provides 100M bit/sec. pipes to the company's heavily used network file servers.

CDI CAD Services in Tempe, Ariz., is testing a Fast Ethernet switch to give users better access to computer-aided design (CAD) applications on a file server.

"We had a bunch of [regular] Ethernet hubs, and since our company has grown from almost nothing to 60 seats, we started seeing slower response times and lots of collisions," said Jim Musso, the firm's system administrator.

Fast Ethernet is widely used in backbone networks, but users and analysts agreed that it is picking up steam as a LAN technology, too.

That means running 100M bit/sec. pipes — not 10M bit/sec. switched Ethernet pipes — to each desktop and installing devices called "10/100 adapters" that can run at either speed.

"That would be really cheap to do, especially since the 10/100 adapters you would need for each desktop computer only cost a little more than the 10M bit ones available today," Maxwell said.

New Cisco products

As expected, Cisco last week formally announced a range of Fast Ethernet products, including switches and router interfaces. The interfaces let users link Fast Ethernet islands. The Fast Ethernet products include the following:

- The 14-port Catalyst 2900, a 10/100M bit/sec. switch with pricing starting at \$15,000.
- The EtherSwitch 2200, a 14-port 10/100M bit/sec. desktop switch.
- A \$9,995 10/100M bit/sec. module for its top-end Catalyst 5000 switching hub.

The wares will ship in July.

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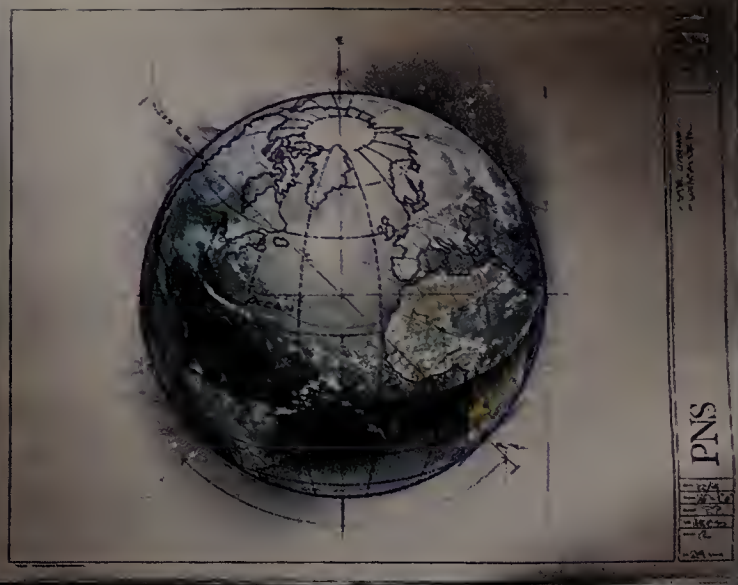
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Cisco adds Internet security to its routers. See page 78

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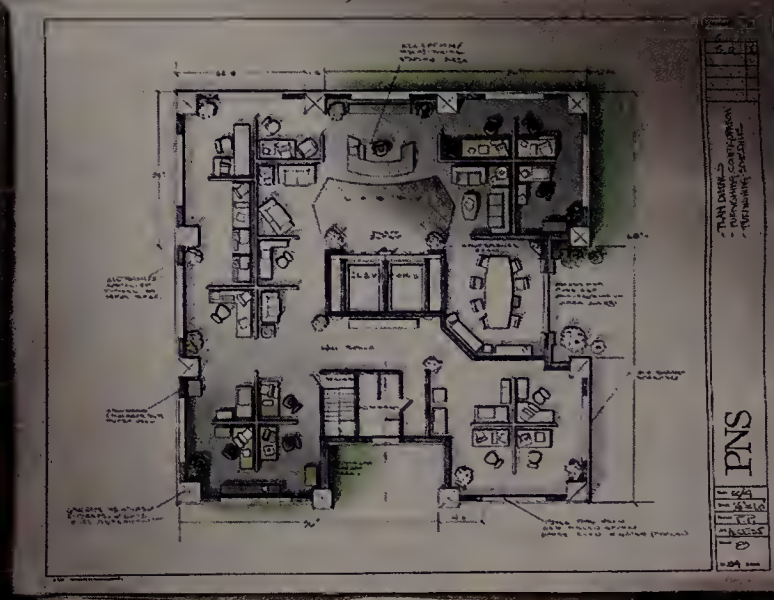
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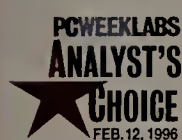
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Objective perspective

Lack of tools, tough scalability top users' list of object concerns

By Johanna Ambrosio
CAMBRIDGE, MASS.

Object-oriented technology requires some serious care and feeding to live up to its promises, users warned at a conference here last week.

For one thing, objects aren't automatically reusable.

For another, all the tools to manage object-oriented technology aren't available, so users must act as systems integrators for what is off-the-shelf — or create their own tools.

Lots of development discipline and high-level commitment are required to create systems that won't become their own generation of legacy headaches.

These are among the observations of users who have been there and done that — that is, have implemented object-oriented applications of one stripe or another.

These customers made their comments at the Best Practices in Distributed Computing conference sponsored by Patricia Sey-

bold Group in Boston.

The idea of upper management involvement was brought home by Matthew Meinel, executive director of information technology at SBC Warburg, a division of Swiss Bank Corp.

Meinel, who is based in London, said the bank's standards body is made up of the chief operating officer, the chief information officers of both major divisions

and another senior-level executive.

"That's extended the idea of objects very deep into

the bank," he said. "Our new CIO is an object designer."

Meinel knows whereof he speaks. "We have lots of legacy [object-oriented] systems in the bank. I manage one with 4 million lines of C++ code."

Blayne Maring, assistant vice president of technology specifications at GTE Telephone in Irving, Texas, is another veteran. "We pulled the plug on a very large, distributed client/server system" that wasn't quite fully object-oriented, he said. The company ran into problems because it in-

stalled the client/server system by "surrounding" the legacy system it was meant to replace — a common approach to new systems implementation.

But the data in the legacy system was "very dirty." In other words, the old application's data was all a jumble and nearly impossible to make sense of without first going in and detangling it. "Data hygiene is very important," Maring said.

Another issue, some attendees said, is that object technology isn't necessarily easy to scale.

But that may be because no one quite knows how to do it, said Mitch Kramer, a Seybold analyst.

"It's early going" for object-oriented deployment, he said. "People have gotten 10, 20 or 30 transactions per second" from object-oriented technology, but nobody knows if performance in the hundreds of transactions per second range is doable.

One problem nearly everyone agreed on was that of reuse. "It takes management discipline and methodology" to get objects that can be used in other applications, Maring said.

Object-oriented technology

Spyglass browser goes to pieces

By Kim S. Nash

Spyglass, Inc. will carve its World Wide Web browser into small pieces that can be plunked in to other software, such as help desk applications, PC connectivity packages and real-time operating systems.

The move to go piecemeal, due to be announced today, is 180 degrees from the direction of rival Netscape Communications Corp.,

which is steadily adding new features to its Navigator browser.

While Navigator gets fatter and requires more and more memory, Spyglass is making its browser components for devices that don't have much space to spare.

Application developers, for example, can pick and choose which pieces to embed in their own products, said Stan Dolberg, an analyst at Forrester Research, Inc. in Cambridge, Mass.

Information systems managers can select certain Web or Internet capabilities to add to in-house software without having to tack on an entire full-function browser, Dolberg said. "You can keep your application as efficient and as small as possible," he said.

QNX Software Systems Ltd. by July plans to put parts of Spyglass' Web Technology Toolkit into a real-time operating system that it is peddling to makers of low-cost Internet terminals.

"We want to be able to choose exactly which functions to put into the system because, in those kinds of machines, you can't fit a lot," said Scott Stillabower, a technical manager at QNX in Kanata, Ontario.

Although Spyglass' primary customers are other software firms, IS groups can buy the kit.

And Quarterdeck Corp. plans to add Spyglass' Hypertext Markup Language module, among other pieces, to its desktop applications by this summer, said Emerick Woods, vice president of Internet products at Quarterdeck in Marina Del Rey, Calif.

Piecemeal approach

Spyglass split its browser into more than two dozen modules that can be plugged in to other software or applications. Here is a sampling of the pieces:

- HTML support
- Image and audio support
- Java, JavaScript and Visual Basic Script support
- Support for Gopher, Net News Transport Protocol, Hypertext Transport Protocol and other Internet services
- Encryption, authentication and on-line payment security support
- International language support

Price: \$25,000 for the pieces, 1,000 runtime licenses and a year of support

Slow and steady wins distributed computing race

By Craig Stedman
CAMBRIDGE, MASS.

Some large companies trying to restore order to chaotic computing environments are finding that the fine art of compromise is a necessary part of their arsenal.

Global directories and security services may have to be put off, according to several users attending a conference on distributed computing here last week. And reining in information systems sprawl can be such a large task that only some basics are feasible at first, they said.

"We're just putting in place things that are so rudimentary," said Ajit Kapoor, manager of infrastructure architecture at Allied-Signal, Inc. in Morristown, N.J. "Right now, anything beyond that would be like building the Taj Mahal on sand and waiting for it to collapse."

Step at a time

AlliedSignal in January began an 18-month project to impose standards on technology and IS procedures across its North American operations. The GlobalLink project, which is budgeted at about \$100 million, will then be expanded overseas, according to Kapoor.

GlobalLink is expected to be a precursor to a future distributed architecture that may include technology such as object request brokers, remote procedure calls and directory and security services.

"We can't even think of that today, at least enterprisewide," Kapoor said. First, the \$14 billion aerospace company has to quell the "anarchy" of its IS environment, he said. "Every site and every [business unit] was a separate entity before and was encouraged to do its own thing."

Other users at the conference, which was sponsored by Patricia Seybold Group in Boston, told similar tales of walking before they could run.

"There are a series of compromises" that have to be faced, said Warren Bernard, senior manager of retail systems development at MCI Communications Corp. in Washington.

MCI's Mass Markets unit, which handles small business and residential customers for the long-distance company, began im-

plementing the Open Software Foundation's Distributed Computing Environment (DCE) technology in the middle of last year.

But it "elected to postpone the inevitable" by leaving DCE's directory and security services until a later phase, Bernard said. DCE also isn't being integrated with its mainframes yet.

Long-distance rival Sprint Corp. also is making do with "a poor man's version" of directory and

Coming to terms

A glossary of key distributed computing technologies

- **GLOBAL DIRECTORY SERVICE:** Allows desktop clients to transparently access data on servers across a network.
- **GLOBAL SECURITY SERVICE:** Provides networkwide security functions, including single log-in to multiple systems.
- **MESSAGING MIDDLEWARE:** Lets applications communicate and exchange data via asynchronous messages and queues.
- **REMOTE PROCEDURE CALL:** Transmits commands from clients to servers and waits for responses (communications protocol).
- **OBJECT REQUEST BROKER:** Manages and routes communications between objects on a network (software).

security services in its home-grown, message-based architecture, said Wing Lee, a senior software engineer at Sprint's Business & Technology Architecture department in Irving, Texas.

"You can't do everything at once or else it will kill you," Lee said. Sprint's basic directory service won't scale to enterprise dimensions, and security is provided through data fields that can be used to embed passwords and user identifications in applications.

"We wanted to cover the basics first, and we decided this would buy us time," Lee said.

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SSA leaves some users in the cold

Object apps neglect Unix terminals

By Julia King

System Software Associates, Inc. (SSA) last week rolled out a major version of its object-based client/server manufacturing software for the AS/400 and Unix platforms.

But the Chicago-based vendor's small but emerging base of Unix users — fewer than 200 companies — may be in no big hurry to buy it. The main reason is the lack of support for dumb terminals — a mainstay at most manufacturing companies.

Version 6.0 of SSA's Business Process Control System (BPCS) package contains new configurable order-management functionality, an updated graphical user interface, century dating and the ability to run over the Internet. Pricing for a 100-user software li-

cense is \$350,000.

Yet it is what the software doesn't offer — namely, the ability to use character-based terminals under Unix — that has left some users feeling stranded.

"Why they decided to abandon all of us terminal users is a mystery," said Mike Durant, director of information services at \$90 million Fort Wayne Plastics, Inc.

"What they're saying is, 'We're now going to move you over to a new product where you have to throw out your existing equipment,'" Durant said. As a result, the Fort Wayne, Ind., manu-

facturer of pool liners has no immediate plans to upgrade to the software, he said.

Durant said an upgrade would involve replacing about 120 terminals with PCs at a cost of about \$3,000 each.



SSA CEO Roger E. Covey: 'We don't put a gun to anybody's head'

Aberdeen Group, Inc. analyst Jack Maynard also questioned the wisdom of SSA's move away from terminal support for Unix users. Many of SSA's bread-and-butter customers — primarily midsize industrial firms — just aren't ready to move to all PCs, he said.

"The challenge SSA has is that they made this great leap between green-screen and object-oriented technologies without touching

down to earth on the intervening technologies," Maynard said.

"It's a concern that their existing customers and the hardware they have isn't capable of existing with this new technology," he added.

Meanwhile, SSA's traditional customer base — some 7,500 companies with AS/400s — have the option to run BPCS 6.0 in a

mixed terminal and PC environment. The catch is that many of the newer object-oriented functions, such as configurable order management, will run only on a PC front end.

"That's because you can't run objects on a dumb terminal," said Riz Shakir, SSA's vice president of architecture and technology. "But you can mix and match terminals and PCs, which was the market requirement that we saw

from our AS/400 users."

The decision to furnish terminal support only to AS/400 users was "a pragmatic decision," said CEO Roger E. Covey. For Unix users who choose not to migrate to Version 6.0, Covey said SSA will continue to support old releases of the software "basically forever."

"We don't put a gun to anybody's head," he said.

In the last year and a half, SSA has plunged headlong into object technology mostly because of the flexibility that reusable, reconfigurable software objects offer, Covey said.

For example, under BPCS' new object-based integrated supply-chain feature, a company could quickly and easily set up and change credit terms and shipping arrangements for thousands of individual trading partners.

The new supply-chain capabilities are based on technology from Dallas-based I2 Technologies, Inc., a strategic partner of SSA.

Client/server software

Text-based AS/400 goes GUI

By Michael Goldberg

The AS/400 is hip — or at least so cool that systems managers can say "so long" to the text-based green screen if they want.

That's because IBM is prepping Windows 95-based systems management software for AS/400 users, company officials said. Availability will be announced in late June.

Unity software, from the Rochester, Minn.-based AS/400 group, will let systems managers point and click their way to tracking the configuration and functions of an AS/400-hosted network.

Unity is part of a trend; there are other packages that convert AS/400 text-based menus and command lines to graphical user interfaces (GUI). Kevin Corcoran, director of competitive marketing at the AS/400 division, said 70% of AS/400 users work with Windows clients. He said IBM is serving their needs by developing this new systems management package for the Windows 95 screen, which is now familiar to many users.

Change is good

Some information systems staffs welcomed the enhancements.

The familiar look and feel of a Windows 95 systems management PC "would probably make things better for my [systems] operators," said David Ferrell, MIS manager at Norwood Promotion-

Assembly line

IBM will make the AS/400 easier to manage and use in client/server networks with the following:

- Unity, AS/400 systems management software to run on a Windows 95 PC
- Client Access for Windows 95
- Client Access via TCP/IP and Novell IPX

al Products, Inc. in San Antonio.

Unity, which will be demonstrated at this week's Common conference in San Francisco, also represents IBM's efforts to make the AS/400 easier to use in an open systems environment, observers said.

"This has been one of those things that has taken longer than [IBM] would have liked, in terms of offering a wide variety of capabilities through [GUIs]," said Dave Andrews, managing partner at D. H. Andrews Group, Inc., a consulting firm in Cheshire, Conn. "That's been kind of a sore point with the AS/400 [community] for quite a while."

Indeed, IBM has launched a campaign to demonstrate how the 8-year-old AS/400 stacks up against computers with Unix or Microsoft Corp.'s Windows NT operating system. IBM officials said Unity is one such effort.

Other examples, also to be discussed at Common, reflect IBM's move to add functions to the Client Access software suite for PCs connected to AS/400 servers.

The company has posted a beta version of Client Access for Windows 95 software at its World Wide Web site (<http://www.as400.ibm.com>). This summer, IBM is due to release more networking functions for clients to directly access the AS/400 through networking protocols such as TCP/IP and Novell, Inc.'s IPX.

This would eliminate the need to have a separate network server for clients besides the AS/400, said David Peterson, president of Midrange Open Business Strategies, Inc., a consultancy in Rochester, Minn.

Larry Overstreet, systems engineer at Dayspring Greeting Cards in Siloam Springs, Ark., said the client networking capabilities IBM has planned could help his IS shop, which uses Novell's NetWare.

Without this capability, "you need to have extra components in your environment, to connect PCs at the client to the AS/400 at the host. My assumption here is that I'd need less drivers at the client level and have less complexity in my environment," Overstreet said. That means fewer potential headaches, he added.

Sun's 64-bit strategy eases user concerns. See page 49.

IRS

CONTINUED FROM COVER 1

The national program must be popular because the agency received 100,000 more Tele-File returns than it had projected, IRS spokesman Don Roberts said. That might be due in part to the average filing time, which is just under 10 minutes with Tele-File, Roberts added.

This paperless process is the Holy Grail of the tax system. It is expected to cut processing costs and eliminate input errors.

Success story

Several parts of the IRS systems overhaul have been sharply criticized by Congress and the General Accounting Office (GAO) [CW, April 1], but the Tele-File system has been a success story, said Dave Attianese, an assistant director at the GAO.

"This is one part [of the tax systems modernization project] we haven't found anything to complain about," Attianese said. "It's the best thing they have and a truly paperless system."

However, it works only for people with relatively simple tax-filing needs. Marinos, for example, qualified because he is single with no dependents, has fewer than six W-2 forms and used Form 1040EZ to file his federal taxes last year.

More than 23 million English and Spanish Tele-File packets were mailed out in this first year of the program, Roberts said.

Filers receive a personal identification number (PIN) inside the packet, along with an 800-number to call. The telephone calls go to centers in Memphis or Cincinnati that can handle 1,008 calls at a time. If all those lines are busy, the call is transferred to a backup office in Ogden, Utah.

The incoming calls go directly into a Unix-based system, developed by Periphonics Corp. in Bohemia, N.Y., that prompts callers for their Social Security numbers and PINs. Filers enter the digits on the telephone keypad and the system transmits them across an Ethernet LAN to the IRS host

computer, a Nile 150 minicomputer from Pyramid Technology Corp., at each call center.

The minicomputer matches this information with an Informix Corp. database of taxpayer information and prompts the callers for line-by-line wage and tax information from their W-2 wage statements. The host calculates taxable and adjusted gross income, the tax amount and the refund or balance due.

The system then asks the caller if he wants to actually file. If so, the minicomputer stores the tax return information and gives the caller a confirmation number.

"This is one part [of the tax systems modernization project] we haven't found anything to complain about."

— Dave Attianese, GAO

Will Apple/IBM deal give Mac OS more juice?

By Lisa Picarille

IBM is negotiating with Apple Computer, Inc. to license and resell the Mac OS, but industry watchers said they doubt the deal will do much to broaden the Macintosh platform.

"More supply doesn't equal more demand," said Bill Gurley, an analyst at CS First Boston, an investment banking firm in New York.

Gurley said there is no indication that Apple's plan to more widely license its operating system will attract more users. The Macintosh has about 10% of the PC market, according to Dataquest, Inc., a market research firm in San Jose, Calif.

The agreement, expected to be completed by the end of the month, calls for Apple to grant IBM Microelectronics the ability to sublicense the Mac OS to other hardware makers, according to sources close to the Cupertino, Calif., company. Apple officials declined to comment. IBM Microelectronics is the division that manufactures PowerPC chips.

What's the deal?

Apple struck a similar deal with Motorola, Inc. in February [CW, Feb. 26], but Motorola plans to make complete systems and motherboards.

IBM simply plans to relicense the Mac OS to customers who purchase

services company in New York, which has more than 100 Macintoshes.

But for large corporate sites heavily invested in the Windows platform, having more systems makers deliver Macintoshes makes little difference.

"We have already established corporate

standards and have an investment in the PC Windows world," said T. Demetri Vacalis, assistant director of communications for the epidemiology program office at the Centers for Disease Control and Prevention in Atlanta.

The agency has more than 7,500 PCs

and only 20 Macintoshes.

"To run out and buy anything else requires specialized approval from our standards committee," Vacalis said.



Mac users can run Windows 95 applications. See page 56.

Total sales

Apple has shipped more than 22 million Macintoshes.

PowerPC chips, according to a source briefed on the company's plans.

"I don't consider this to be a huge deal," Gurley said. "It's more like wishful thinking. After the way IBM and Apple have mishandled Taligent, Kaleida, Prep and OpenDoc, I think people should be skeptical first and optimistic second."

Pieter Hartsook, editor of the "Hartsook Letter," an industry newsletter in Alameda, Calif., said, "I think this is the most bizarre deal I've seen come down the pike in a long time. It's not like IBM is going to build motherboards, like Motorola is doing. All they are doing is saving some system maker the trouble of writing out two invoices — one for the PowerPC chips and one for the Mac OS."

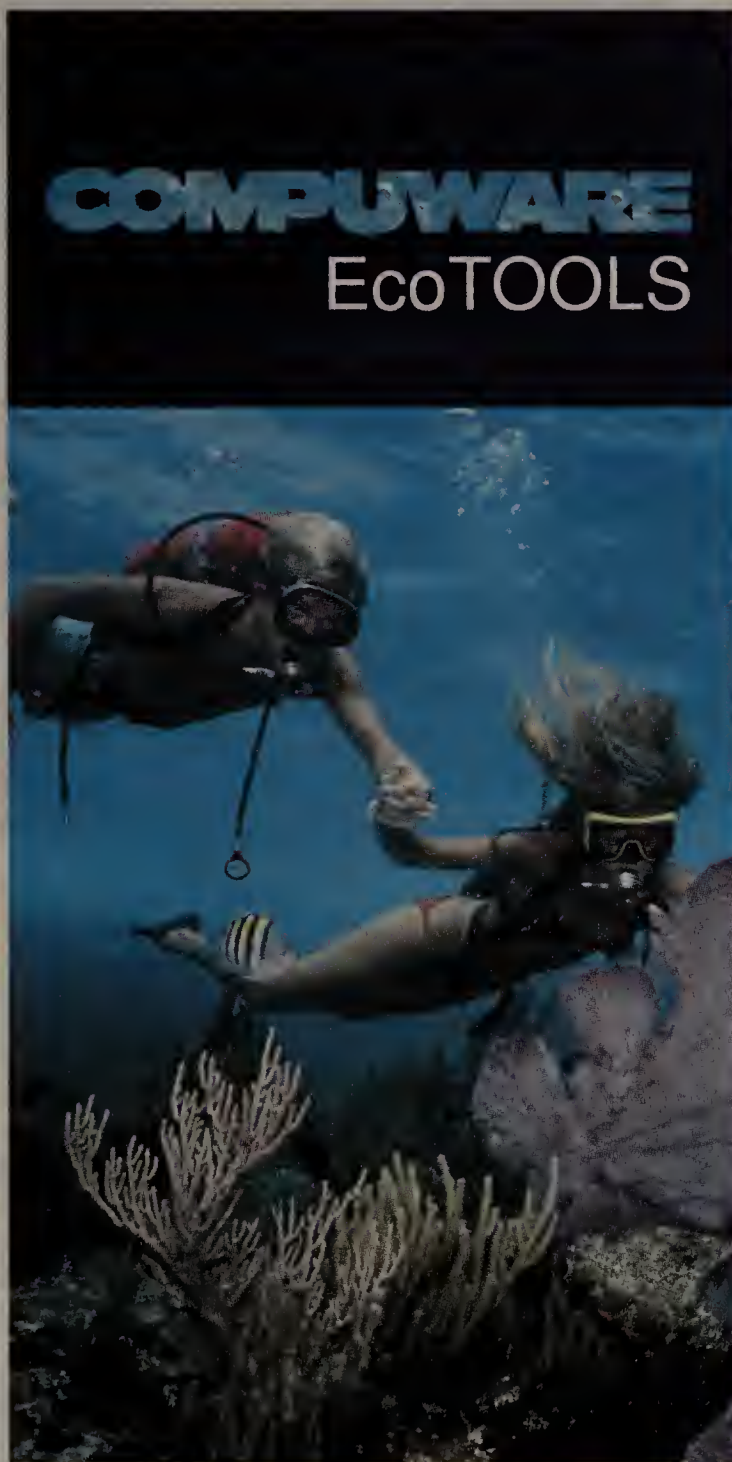
He added, "I'm not sure it will help sell any Mac systems."

But the faithful claim that the more systems makers that support the Macintosh, the better.

"I believe it would help," said Mitch Hollander, a research scientist at the Food and Drug Administration in Billerica, Mass., which has 100 Macintoshes but is considering a move to Windows NT.

"I think it would go a long way toward restoring corporate users' confidence," Hollander said.

"The more people making Macs, the more it relieves Apple of the burden of being the primary source," said John Papa, a partner at The Carson Group, a financial



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EcoTOOLS

Distributed management

CONTINUED FROM COVER 1

from one point is too much to manage, which is why operators often use event-correlation engines and filters to avoid overload. By distributing multiple management servers, they can provide a hierarchy of information being passed along to the next level.

"We had to change from a central to a distributed management strategy" to get back in control of the network, said Frank Belland, a senior systems architect at Lockheed Martin Corp.'s enterprise information systems center in Orlando, Fla. "[It's] cutting your own throat to try watching everything from a single point."

At Lockheed, administrators took the risk of running the beta version of HP's new software on their production network. They had to keep up with the aerospace industry consolidation that doubled the devices they were monitoring to more than 42,000.

"As companies merge, their networks do, too," Belland noted. "We quickly outgrew the old HP [OpenView] platform's capabilities, and we'll add more nodes when the acquisition of Loral Corp. goes through."

Lockheed deployed Version 4.1 of HP's OpenView Network Node Manager on numerous servers throughout campus or city domains instead of monitoring the entire network from one server in a central command center. Each server now polls local devices and forwards changes in network status to four regional operations

centers. As a result, wide-area network traffic has dropped, and the database shrunk, Belland said. Yet operators at the four centers can still view reports on routers or servers, for example, anywhere across the WAN. They also can back each other up in case of maintenance or disaster.

Performance hike

At Chrysler Corp., more than five OpenView servers are being deployed in business units to unload the central server that monitors 22,000 nodes on its network.

"We expect performance to jump by at least a factor of four from our tests, because separate servers can poll fewer devices in their domains," said John Baker, a telecommunications specialist at Chrysler's Auburn Hills, Mich., headquarters.

Before this latest version of OpenView, Duke Power Co. in Charlotte, N.C., struggled to cope with growth by beefing up its central OpenView server with more memory and processors. The firm also had to tune its network tools to wring out enough performance to support a database of 35,000 objects, said Paul Edmunds, a network analyst at Duke.

But HP's improvements add distributed management capabilities that users of Cabletron Spectrum have enjoyed for the past year. Version 3.1 let them link servers in separate domains, and now Version 4.0 will help unify their view of all those servers.

For example, the current Spec-

Vendors ease growing pains

HP has taken a big step toward scaling its OpenView network management platform to ease users' growing pains: It has finally delivered on a new management architecture.

The so-called Tornado project enables servers to split coverage of large networks among multiple servers, instead of trying to monitor every device from one point of view.

But Cabletron remains a step ahead of the crowd when it comes to truly distributing management, according to analysts.

HP increased the ability of Network Node Manager to



cover multiple large domains. But the product has yet to achieve a fully distributed architecture — one that lets users share data and applications across domain boundaries, said John McConnell, president of McConnell Consulting, Inc. in Boulder, Colo. More than a year ago, Cabletron's Spectrum Version 3.1 let users establish management domains to lessen the load of monitoring large networks. Now, with Version 4.0, users can get an enterprisewide view of once-separate domains through distributed reporting enhancements.

— Patrick Dryden

trum Version 3.1 enabled integrator KE Kommunikationen Elektronik GmbH & Co. in Hannover, Germany, to tackle a huge management challenge: distributing control of the new telecommunications network for national carrier Deutsche Telekom.

KE is deploying about 1,000 Spectrum servers throughout 39 areas to monitor more than 1 million subscribers, said Jurgen Joswig, KE project manager.

Other leading network management platforms lacked the distributed capability and customization

tools that KE was looking for when it took on the modernization project last year, Joswig said.

KE will adopt Spectrum Version 4.0 to conserve memory and speed up operation through enhancements such as dynamic model loading, which lets operators narrow their view of network devices, Joswig said.

Another user, with less extensive needs, will distribute Spectrum servers and upgrade to Version 4.0 at the same time to cope with growth.

"Our single Spectrum server is

starting to hyperventilate, and all our management traffic is funneling through one data center, so we'll expand to three servers to monitor regions," said John Scoggin, staff technical consultant at Delmarva Power and Light Co. in Newark, Del.

Upgrading to Spectrum 4.0 during this expansion will give more operators access to management data from cheaper Windows NT consoles and from Web browsers, Scoggin said.

Savings for state

For the state of Michigan, Spectrum was picked to distribute management among all state agencies as part of a consolidation project. Unifying once separate WANs should save the state \$3 million — nearly four times as much if a single group controls all LANs, said Bryan Ruhf, manager of the state's central network operation center.

Another large user, the U.S. Postal Service, is finding that the data compression in Spectrum 4.0 reduces the size and bandwidth required to distribute reports among servers.

"We were managing the whole thing from here with three servers for three regions. Now we're distributing further, to 15 router sites on our private WAN that can suck in information from the levels below them," said Dan McPhillips, telecommunications program manager at the Postal Service data center in Raleigh, N.C.

Interoperability for systems management tools may be down the road. See page 67.

Thin clients ablaze

CONTINUED FROM COVER 1

Race for the Web

Oracle, Powersoft and Microsoft are sprinting to Web-enable their client/server development tools

Vendor	Oracle	Powersoft	Microsoft
Product	Designer 2000, Developer 2000	PowerBuilder	Visual Basic
In Q2	Ability to generate Web pages and embed browser in applications	Netscape Navigator plug-in to run PowerBuilder applications over the Web; ability to save DataWindows as Web pages	Release Visual Basic Script, a Visual Basic subset for scripting Web pages
Later this year	Generate Java applications	Support for Java	Built-in Internet support for Visual Basic

Web browser — will need to be downloaded to each user's PC.

Right now, applications often demand a PC with at least 12M or 16M bytes of memory, said Michael Brando, an engineering manager at Perkin-Elmer Corp. in San Jose, Calif. If most of each application can be moved to a Web server, that memory could be cut to a few megabytes, he said.

"The users won't have all the application code sitting on their PC, just a Web browser, so they don't have the burden of a big fat client," Brando said. "But they have the full capability, as if they had installed the application on their PC."

That can cut software and hardware costs for organizations with large client/server installations and tight budgets, said a systems analyst at a major retailer who requested anonymity.

"We're running hundreds of clients in hundreds of locations, and one of the biggest challenges is

upgrading [applications]," the systems analyst said. "This way, we only have to upgrade the servers. The clients are just running whatever the best browser of the month is."

"If we can save \$200 [each] on 2,000 clients that don't [require] 8 more megabytes of memory this year, you do a little quick math and we're suddenly in hundreds of thousands of dollars really quickly," he added. "We're better off for dollars and cents, along with the harder-to-measure manageability of only having to upgrade a few servers instead of thousands of clients."

Hoping to give users the tools they need for those Web-based applications, Oracle this month will ship a version of its Designer 2000 application modeling tool that

generates code for the firm's Web server. Developers will be able to use the Designer 2000 code to link Web pages to databases in applications written with Visual Basic or Developer 2000. Oracle in June will add Web-related data types to Developer 2000 and let developers embed Oracle's PowerBrowser Web browser in Developer 2000 applications.

And by 1997, the Oracle tools will let users generate the client or server parts of an application in Java. "In the short term, they're taking the burden off the programmer in figuring out how to connect databases to Web pages. In the longer term, they'll actually be producing Java code," Brando said.

Telcos may not be good Internet providers. See page 37.

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COMPAQ

Has It Changed Your Life Yet?

Lotus seeks bigger taste of suites

By Lisa Picarille

Lotus Development Corp. isn't sour about being a distant second to Microsoft Corp. in the desktop application suite market.

It's too busy focusing on an aggressive attempt to boost its unit market share to

20% during the next six months.

The Cambridge, Mass.-based unit of IBM last week outlined several initiatives designed to increase SmartSuite sales. They include a beefed-up advertising budget, a dramatic price cut for the product, new bundling deals and a utility designed

to help users of WordPerfect Corp.'s word processor convert to Lotus' Word Pro processor (see chart).

SmartSuite sales account for about 18% of the suites market. Microsoft Office leads the vendor pack with more than 70% of the market, according to Dataquest, Inc., a

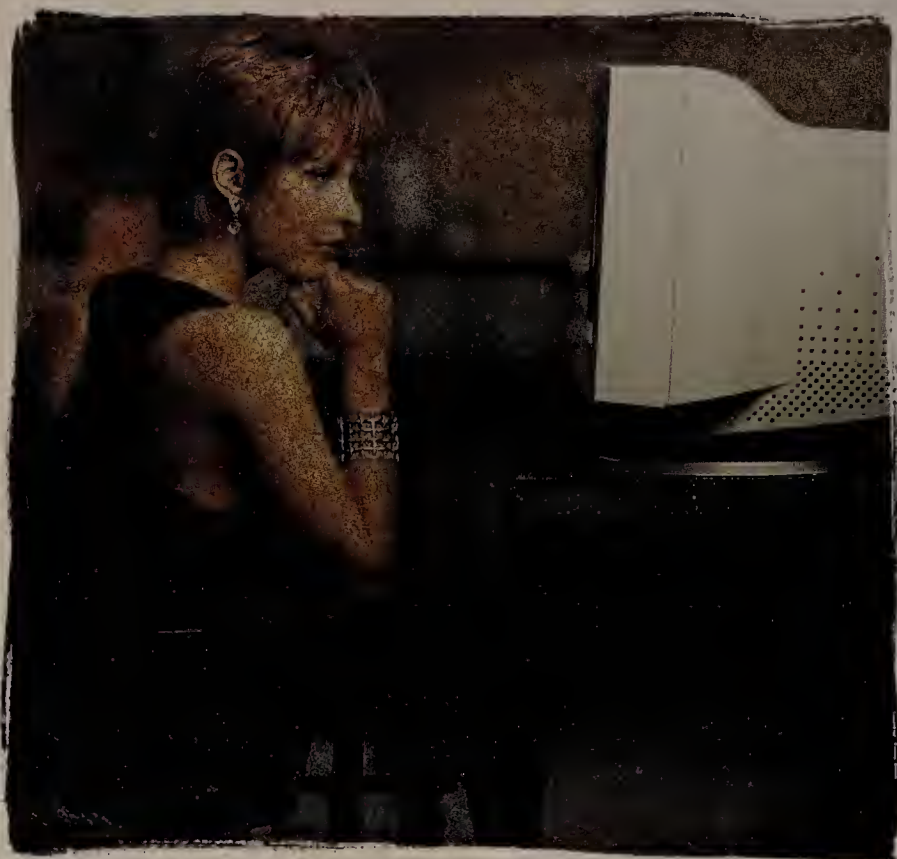
market research firm in San Jose, Calif.

"We are trying to reestablish ourself as a strong No. 2 player in the market," said Bill Jones, senior director of applications product management at Lotus.

To that end, Lotus is dropping the price of SmartSuite from \$679 to \$149. Microsoft Office costs \$249 and Corel Corp.'s WordPerfect Suite costs \$395.

A conversion kit designed to lure WordPerfect users to Word Pro can be accessed as a new help option under the current Word Pro help menu. It supports the conversion of WordPerfect files to Word Pro format and helps WordPerfect users learn how to do tasks in Word Pro.

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To boost sales of SmartSuite, Lotus has:

Increased advertising budget by 40%

Released WordPro conversion kit to WordPerfect users

Cut price of SmartSuite 96 (Windows and OS/2 versions) from \$679 to \$149

Signed SmartSuite bundling agreements with IBM and Hewlett-Packard

Released Lotus Gallery 96 CD, a free, 45-day trial version of SmartSuite

Company officials predict they will reach 8 million users via bundling deals with hardware makers.

A trial version of SmartSuite will be bundled with Hewlett-Packard Co.'s DeskJet 600 printers in Europe. Lotus already has bundling deals in North America and Canada with AST Research Corp., Acer America Corp. and Epson America, Inc. IBM bundles SmartSuite on all Aptivas, ThinkPads and IBM 300 and 700 Series products worldwide.

One industry watcher was skeptical that these moves would increase market share.

"Low prices and free seeding work best in brand new markets," said Jeff Tarter, editor of "Softletter," an industry newsletter in Watertown, Mass. "Once a corporate standard has been established, rarely is there much impact on market share."

Still 16 bits for 1-2-3

SmartSuite 96 for Windows 95 began shipping in November but still lacks a 32-bit version of Lotus' flagship 1-2-3 spreadsheet. The suite includes the Word Pro word processor, a 16-bit version of 1-2-3, the Approach database and the ScreenCam multimedia tool. A Windows 95 version of 1-2-3 is due later this year. The company also is expected to deliver an OS/2 version of SmartSuite in May, according to sources briefed on the company's plans.



Windows 95 applications sold big last year. See page 53.



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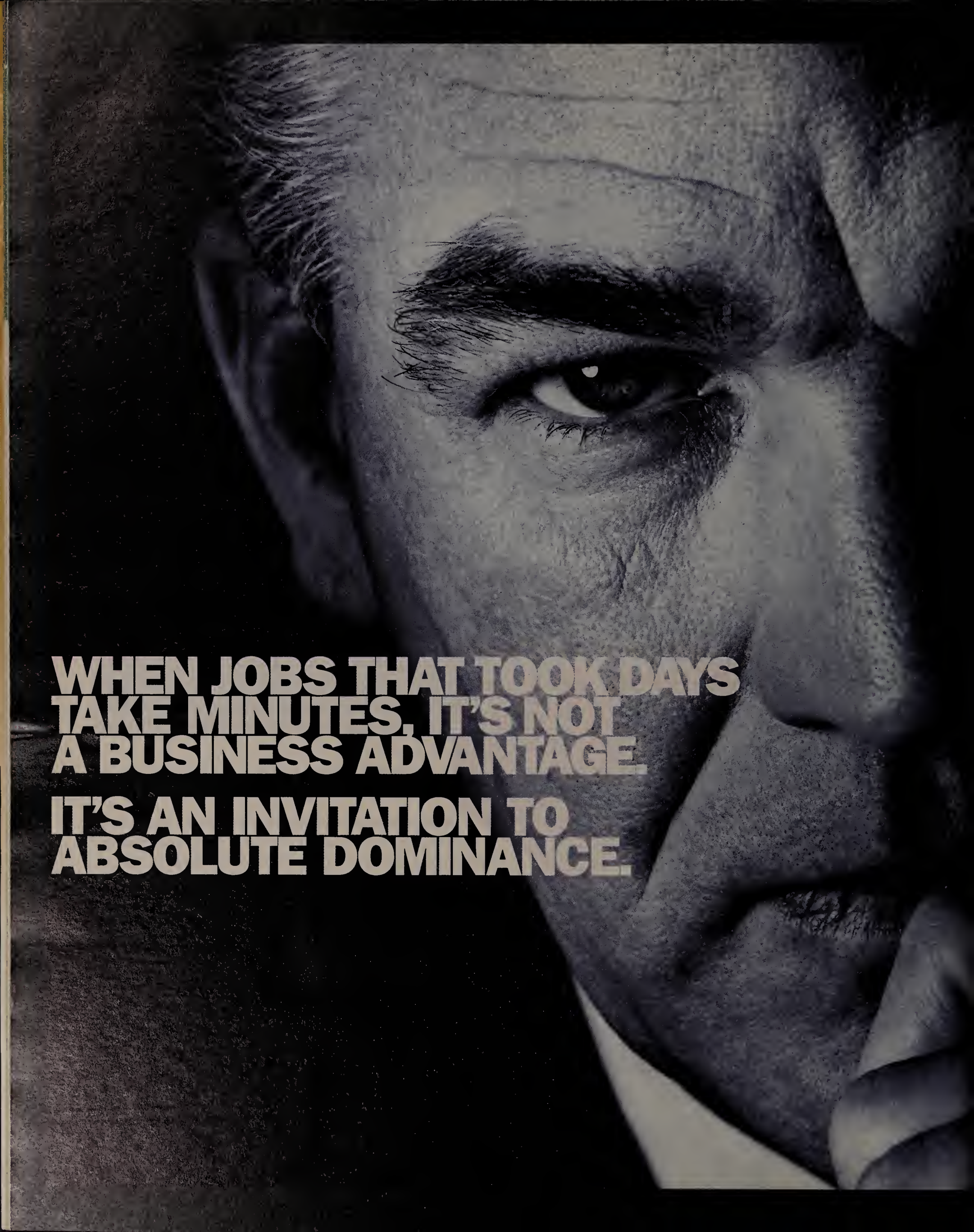
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EMC to pump data over networks

By Michael Goldberg

Continuing to move beyond its mainframe heritage, EMC Corp. plans to offer a storage system that centralizes network data through a technology that eliminates the need for servers as middlemen, company

executives said last week.

Last year, EMC introduced storage systems for the Unix market. Later this year, the Hopkinton, Mass.-based company will unveil Symmetrix storage systems that use a special board with an Intel Corp. microprocessor and software designed to act as a

"data pump" for files requested over a network.

EMC expects to sell these systems for applications such as network-accessible storage and backup systems and video-on-demand setups, said Israel Gat, general manager of the company's network

storage group.

The company also plans to unveil technology that will enable both MVS-based mainframes and Unix servers to share each other's data stored on the same Symmetrix system, said James Rothnie, a senior vice president of marketing at EMC.

With the exception of the EMC Media Server, which is available now, the firm wouldn't specify release dates for Symmetrix systems that have the new technology.

Analysts said EMC's strategy fits the emerging needs of information systems managers who are scratching their heads, wondering how to deal with a hodgepodge of hardware and software products linked to a variety of data stores for PCs, servers and mainframes.

But even if EMC fulfills its promises, users will be

Data storage

watching carefully to see if the storage vendor can provide enough flexibility, said Stan Johnson, director of management information services at Worldport, the port of Los Angeles.

For example, EMC plans to offer data-sharing technology to MVS and Unix shops first, but Worldport uses an Amdahl Corp. mainframe with IBM's VSE operating system.

"Whatever box goes into our shop, if open systems is really going to be a reality, it's got to work with MVS, VSE, Unix, Windows NT — and they've all got to peacefully coexist," Johnson said.

Expansion on the way

EMC officials said they plan to expand the data-sharing technology to more operating systems over time. The company is studying a Windows NT bridge as well as additional mainframe environments, a spokesman said.

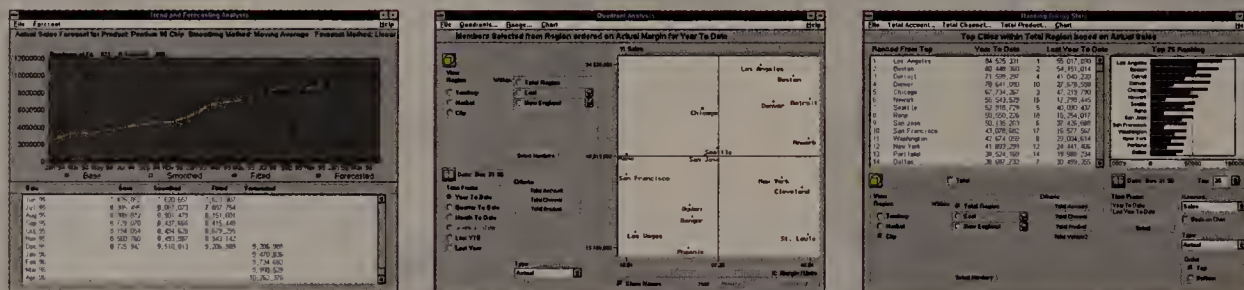
This is understandable, said Carl Greiner, an analyst at Meta Group, Inc. in Stamford, Conn. Setting up common views of data stored in different formats for different computers is tricky to implement and will evolve over time, he said.

The data-sharing technology could ease the work of users looking to migrate applications from mainframes to Unix systems, said Tom Lahive, an analyst at International Data Corp. in Framingham, Mass. It also helps IS shops that are setting up a data warehouse application on a Unix server that can access legacy mainframe data, he said.

Lahive said EMC's introduction of network-accessible storage systems could provide an important tool for IS shops that seek to centralize the location of various data sets.

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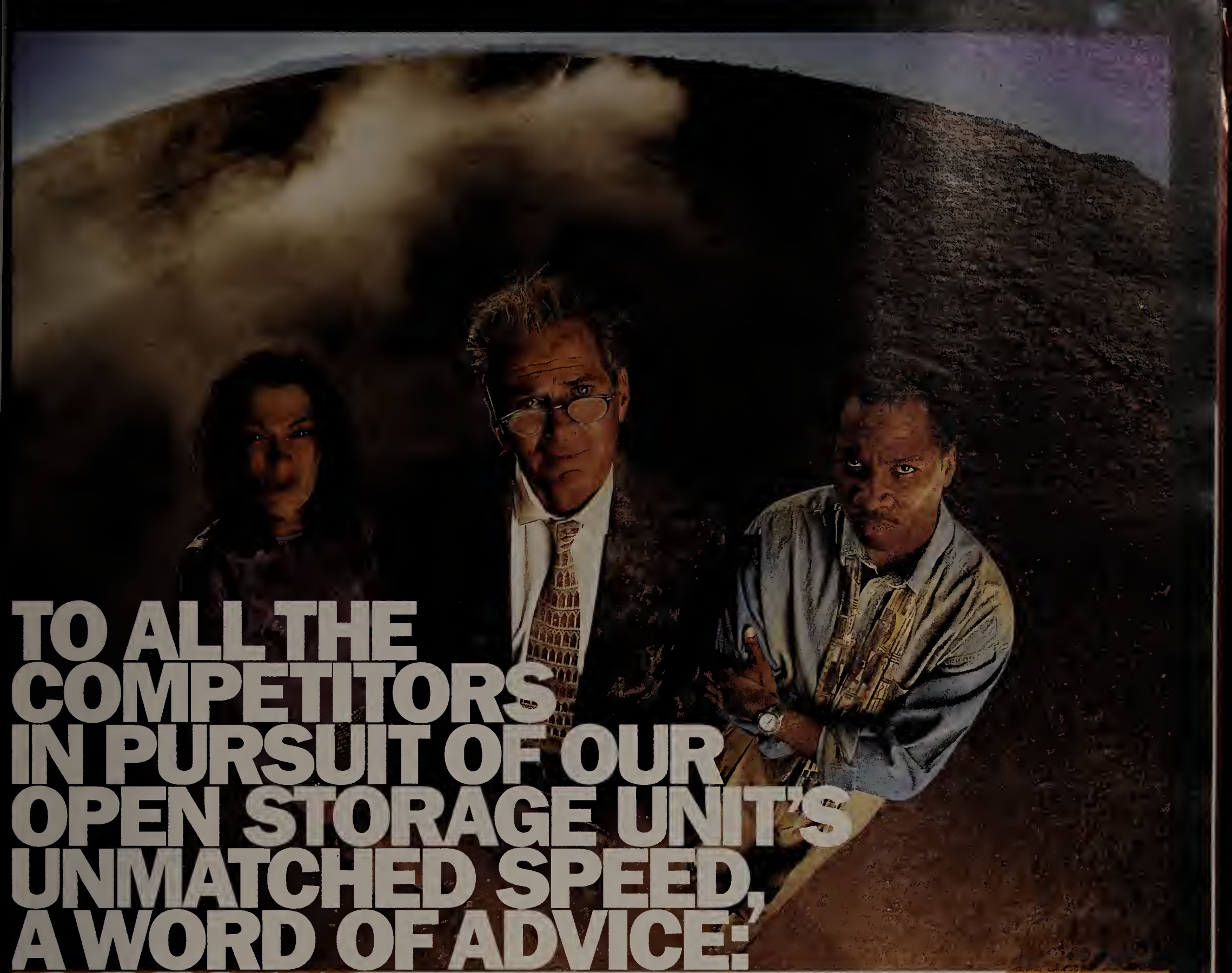
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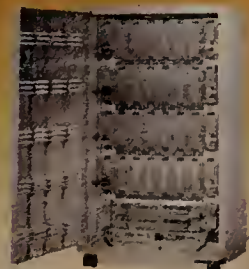
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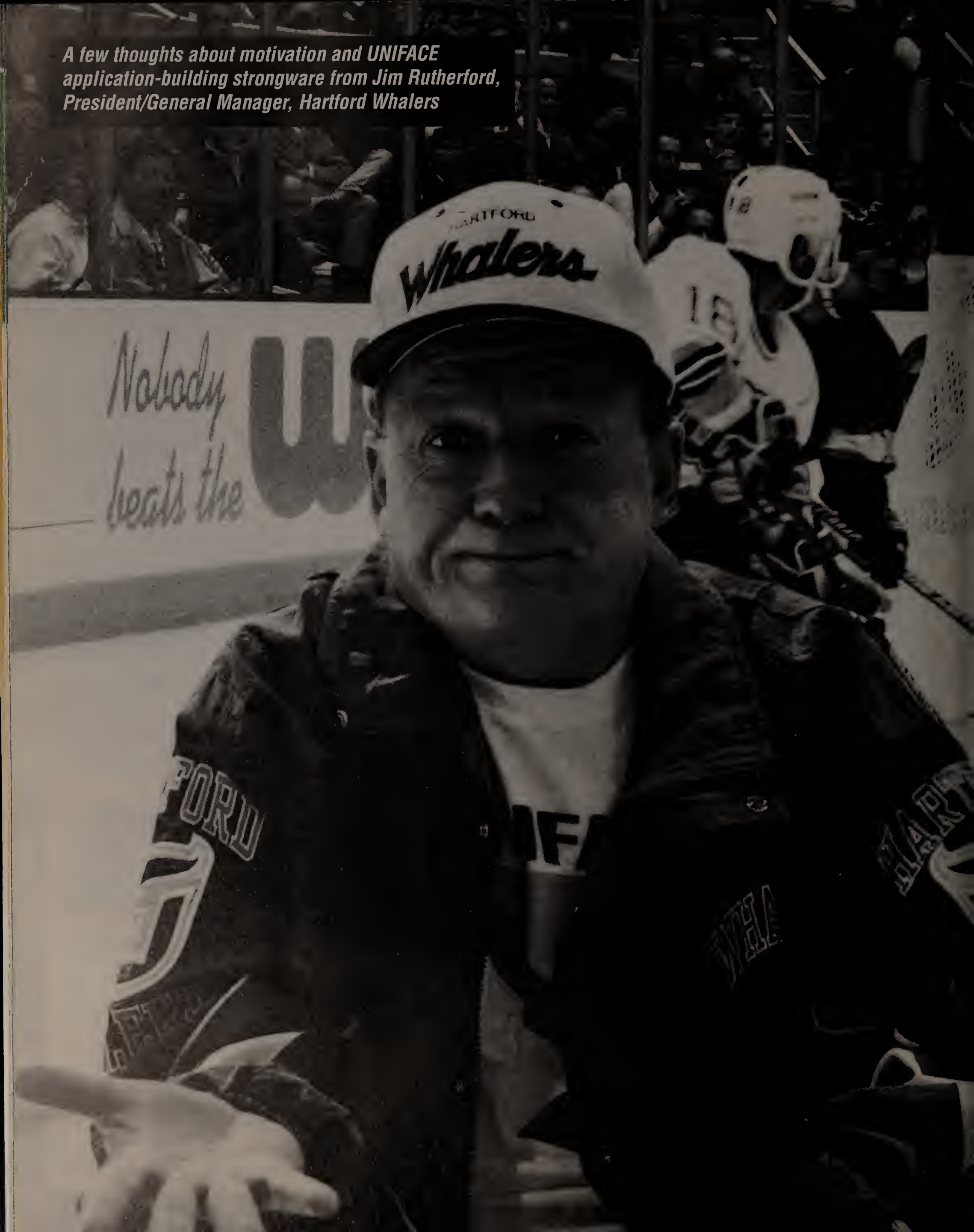


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*A few thoughts about motivation and UNIFACE
application-building strongware from Jim Rutherford,
President/General Manager, Hartford Whalers*





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UNIFACE APPLICATION DEVELOPMENT STRONGWARE

Tools help repave the road to groupware

By Tim Ouellette

No matter what route they take to upgrade to groupware, users can count on a variety of tools to make the transition easier.

Lotus Development Corp., Microsoft Corp. and Novell, Inc. all offer migration tools and conversion programs to lure users away from their current messaging packages.

The programs help configure new systems and automate the transfer of old files and directories into the new architecture.

"This kind of thing is expected by enterprise users," said Nina Lytton, president of Open Systems Advisors in Boston. "Vendors can't expect users to do the administrative equivalent of the Jane Fonda workout tape [when upgrading electronic mail], just to have the honor of being their customers."

Lotus announced at the recent Network/Interop '96 trade show that by next month it will provide free migration and coexistence tools that allow Microsoft Mail

and Lotus CC:Mail users to move to Notes.

"I can't wait to get my hands on them," said one user at a health care systems provider; he didn't want his name used. The roughly 200 Mail users at his company who will move to Notes, "don't want to lose their existing E-mail messages, so a simple conversion utility that will move their Mail messages into their Notes Mail folders would be perfect."



Thomas Bridges of the IRS says he doesn't expect to move from CC:Mail to Notes

Lotus Notes 4.0 and Microsoft Exchange provide groupware environments that combine messaging with group discussions, electronic forms and application development. They also are more secure and reliable than LAN-based messaging products such as CC:Mail and Mail. These haven't always scaled well in large enterprise networks and lead to high administrative burdens, analysts said.

Exchange, which Microsoft unveiled at Network/Interop, ships with tools similar to Lotus' offerings.

Additional products include a performance optimizer to determine the best storage location for files, a load simulator and a guide to determine how many users to connect to each Exchange server, depending on the server configuration.

Analysts said a vendor's cannibalizing its own messaging base is just as important as stealing users from other vendors.

In this area, Microsoft is doing a better job providing a simple upgrade path for its Mail users than Lotus is doing for its CC:Mail users, said Tim Sloane, an analyst at Aberdeen Group, Inc. in Boston.

Cambridge, Mass.-based Lotus began shipping Notes 4.0 in January, but new users have had to wait for tools to simplify the move from their current messaging systems. And delays in CC:Mail upgrades, including pending hooks into Notes 4.0, have left one user unwilling to make the move to Notes.

"We won't be going to Notes for mail," said Thomas Bridges, network administrator at the Internal Revenue Service in Austin, Texas. "We have too big an investment in CC:Mail, and Lotus never really delivered on their promised Notes/CC:Mail interoperability."

Novell doesn't want to be left

Upgrade options

Though the three major messaging and groupware vendors are trying to tempt one another's user base, there are general differences in each upgrade product that users should be aware of:

• **Lotus Notes 4.0:** Notes is the most comprehensive groupware environment; it focuses on user customization and application development. Lotus relies on a legion of integrators and third-party developers to help users with an investment that usually is more training-intensive than a basic messaging system. Notes is centered on group access to synchronized Notes databases.

• **Microsoft Exchange:** Exchange is a message-based system tied tightly to Microsoft's Windows NT Server, which is the only server plat-

form it will run on. All communication is accomplished by E-mail messages, including replication. There is no integrated development environment, but users can create simple forms-based applications or go outside to Visual Basic to write programs.

• **Novell GroupWise 4.x:** Novell has yet to deliver its own client/server messaging and groupware upgrade, called GroupWise XTD. The current GroupWise 4.x software includes document management, forms and workflow modules, but it is tightly tied to the NetWare network operating system, much as Exchange is tied to NT. GroupWise also is message-based, and XTD will attempt to let users do most tasks from the E-mail interface.

—Tim Ouellette

out of the loop. For the next 60 days, the Provo, Utah, firm will offer up to 50 free GroupWise 4.1 client licenses, a Message Server

NetWare Loadable Module and a Microsoft Mail migration utility to Mail users who run Novell's NetWare network operating system.

Council calls for a national summit to shape R&D policy

Fiscal constraints, short-term profits threat to 'seed corn'

By Gary H. Anthes
WASHINGTON

The Council on Competitiveness last week called on industry, government and academia to rethink what it said are outdated approaches to funding research and development in the U.S.

The nonpartisan, Washington-based council said the U.S. information technology industry is risking its long-term competitiveness by "eating its seed corn." It cited these trends:

- Long-term R&D is being sacrificed on the altar of short-term profits.
- Overall spending on R&D is decreasing in an effort to get products out of the laboratory more quickly.
- Spending by U.S. companies on R&D is shrinking while overseas

competitors are boosting their R&D investments.

"U.S. preeminence in information technology R&D is taken for granted," the council warned in a report titled, "Endless Frontier, Limited Resources — U.S. R&D Policy for Competitiveness."

But "not only are U.S. companies seriously challenged in global information technology markets, federal budgetary constraints are throwing doubts on vital government participation," the report said.

"U.S. innovation is at risk," said Gary L. Tooker, CEO of Mot-

orola, Inc. and co-chairman of the committee that wrote the report.

He said that between 1980 and 1985, federal funding for R&D increased 6% per year, but since then, it has been decreasing 1% per year on average.

Council members stressed that the report is a "framework for action," not a list of specific recommendations. However, it did make these suggestions:

- Hold a national R&D summit to help shape policy.
- Make the R&D tax credit permanent and use tax laws to encourage long-range R&D.
- Transfer federal

spending on R&D from defense to civilian programs.

- Increase industry access to government-sponsored research.

The council also called on high-technology companies to accelerate a trend that began several years ago: establishing R&D partnerships with universities, other companies and government agencies.

"Partnerships are not a new concept, but we need more and better partnerships," Tooker said. He cited the semiconductor industry's Sematech alliance as an example of a partnership that boosted U.S. competitiveness and saved thousands of jobs.

Federal role

Although the report tries to avoid the partisan battle that presently rages over federal support for industry R&D, it clearly supports the Democrats' view that the federal government should play an

active role in trying to increase the payback from the nation's \$173 billion R&D budget.

Asked about federal R&D programs under fire from Republican lawmakers, Paul Allaire, chairman and CEO of Xerox Corp. and chairman of the Council on Competitiveness, said, "The panel is generally in favor of these programs."

Council President John N. Yochelson said Republicans aren't "monolithic" in their opposition to federal programs that help industry.

In any case, "they are supportive of the basic point that we need to leverage our resources more effectively, by government or not."

A Clinton administration official, who asked not to be named, said of the report, "We are happy to get vindication from a respected industrial third party, and you don't get more respected than the Council on Competitiveness."



Council Chairman and Xerox CEO Paul Allaire says the panel generally supports federal R&D programs

Big spenders

The information technology industry invests between 21% and 35% of all private R&D in the U.S. (\$30 billion in 1994). The top 10% of information technology companies invest 75% of total information technology R&D spending.

Source: Council on Competitiveness, Washington

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“Can a customer pay by credit card without furnishing some hacker's condo in Malibu?”

COMMERCE

There are security risks in all walks of life. But there is something about cybercrime – the idea of someone pressing a few buttons and making off with one's digital belongings – that is particularly frightening. And in fact, commerce on the Net will grow only as fast as confidence in the security of the Net grows.

Fortunately, our confidence has grown pretty fast over the last couple of years. IBM SecureWay includes a variety of services and products that, over time, will make exchanges across the Internet even more secure than nonelectronic transactions – everything from credit card transactions to super-distribution of copyrighted material to the transmission of confidential corporate data.

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Of course, your management needs to understand that an organization on the Internet is only as safe as its weakest link. With that in mind, we've developed powerful firewall, encryption and access control technology, not to mention one of the largest private secure business networks in the world – the IBM Global Network™.

So, in short, that hacker in Malibu is going to have to find a new way to make a living.

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“Will a fancy port scanner algorithm make mincemeat of my firewall?”

DEFENSE

On the one hand, the Internet gives your company the opportunity to open its doors to millions of potential customers, partners and contributors. On the other hand, there are all sorts of very clever people out there who would love to infiltrate your system, whether for mischief, for the challenge of it, or for plain old corporate theft.

Fortunately, we've got some hackers of our own. We call them “ethical hackers.” These are dedicated masters of the very latest techniques of sniffing, spoofing and cracking. And, working with the IBM Global Security Analysis Lab, they put this knowledge to use to develop better and better security countermeasures.

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But, because the world is a rough place and the worst can sometimes come to pass, IBM's Emergency Response Service is on call 24 hours a day, seven days a week around the globe to close any breach in your network and repair the damage. The response team makes itself intimately familiar with your network and systems ahead of time, so that, in an emergency, they already know where to go and what to do.

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Computer Industry

More makers eyeing corporate PC market

By Melissa Bane

In the midst of a PC sales slump, some consumer-focused PC makers are setting their sights on the corporate market. While increased competition may offer users even lower prices, analysts say shaky consumer support histories may give companies pause.

Desktop computing

"I think there's very much a concern about the support

and longevity of these new suppliers," said Stephen Dube, an analyst at Wasserstein Parella Securities, Inc. in New York. "I don't think price is a material factor."

"This [commercial] market is the biggest in the world and the most competitive," Dube said. "A new name will be hard to establish."

Toshiba Corp. and Packard Bell Electronics have announced plans to enter the commercial market, while NEC Corp. is attempting to expand its foothold in this arena. Besides the challenge of overcoming support concerns, analysts see the move as badly timed given that the major players in the corporate market are already cutting prices up to 20%.

Such fierce competition could result in margins too slim to offer any chance for success, analysts said. Moreover, they added, re-

sellers struggle to find shelf space for the existing market leaders and are unlikely to take on new players.

"We've already got more than we can handle with Compaq, HP and IBM, so it's difficult to imagine supporting too many more product lines," said Peter Jackson, president of Dataflex Corp., a reseller in Edison, N.J.

Caught in slump

All other issues aside, PC sales are in a slump throughout the industry and this affects chip makers and box builders alike. Market bigwigs IBM, Compaq Computer Co., Digital Equipment Corp. and Apple Computer, Inc. are all reporting or predicting weak first-quarter sales.

According to William Zinsmeister, an analyst at International Data Corp. (IDC) in Framingham, Mass., the growth rate in the U.S. desktop PC market will slow from 23% last year to 15.3% this year. While the company hasn't broken out corporate vs. consumer growth rates, most analysts believe corporate sales will slow until the third or fourth quarter this year.

This pitch toward the corporate market comes as many vendors are watching their consumer and portables lines start to even out in terms of profit margins, according to Jim Poyner, an analyst at Oppenheimer & Co. Analysts add that it will likely be a year before the next pickup in the market occurs, and it will probably be fueled by consumer PC sales.

Toshiba has best shot

Portables leader Toshiba stands the best shot at success in the commercial desktop space, according to Stephen Dube, an analyst at Wasserstein Parella.

Toshiba already has a strong reputation and corporate customer base with its portables products. It plans to release a desktop line in the fourth quarter.

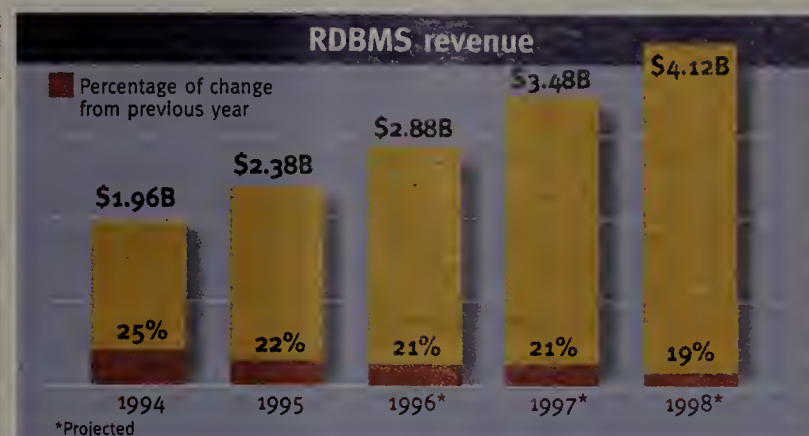
Packard Bell, meanwhile, is approaching this market through acquisition, buying out Zenith Data Systems from France-based Groupe Bull in February. Zenith supplies workstations, portables and high-end servers to the corporate market.

Buying Zenith's market presence may seem like an easy way in, but Packard Bell's support problems could weaken an already limp Zenith name in this market, said Jim Poyner, an analyst at Oppenheimer.

To succeed, these companies will need to refocus to meet the needs of the corporate buyer, said IDC analyst Richard Zwetchkenbaum.

Devotion to strong support and alliances with industry standards and de facto tools vendors can add strength to a company's venture into the commercial market, he said.

— Melissa Bane



Source: The Yankee Group, Boston

Database sales slump in view

By Dan Richman

First Sybase, Inc. and now Informix Corp. have announced disappointing quarterly results, which has prompted analysts to predict the beginning of a slowdown in the database market.

Sybase two weeks ago announced an anticipated first-quarter loss of as much as \$9 million [CW, April 8]. And in an announcement that caused a 28% plunge in its stock, Informix officials last week said the company anticipates earnings per share of 7 cents to 10 cents, rather than the 12 cents to 13 cents per share predicted by analysts. It also expects revenue of \$200 million to \$204 million rather than the predicted \$211 million.

Informix's revenue shortfall was caused by the failure of several large North American contracts to close by quarter's end, said Margaret Brauns, the company's treasurer. Final figures for the quarter ended March 31 will be announced by April 18.

Heady growth slows

The relational database management systems market has expanded rapidly for many years. It has grown about 22% each year from 1992 through last year, said John Mann, a senior analyst at The Yankee Group in Boston. But those heady days may be over.

"The math shows the major RDBMS vendors are growing more slowly this year than last," said Terence Quinn, managing director at Furman Selz, Inc., a financial analysis firm in New York. "The slowdown may be caused by companies putting off purchasing decisions while they consider the

impact of the Internet and intranets. The big vendors don't have ideal products for that."

"But I think it's a bump in the road, not a permanent and absolute slowdown in the market due to saturation," Quinn added.

Other analysts pointed to the increasing popularity of Microsoft Corp.'s Windows NT as an obstacle to the continued growth of the big RDBMS vendors; those vendors sell an overwhelming percentage of their products on Unix platforms.

Though the spurt may be over, that doesn't mean an end to growth.

Mann predicts the RDBMS market will grow at an annual rate of 16% between 1995 and 1998, and he said the market will hit \$4.1 billion by 1998. "Yes, that is a slowdown in growth rate, but I can't see the demand for RDBMSs falling off the end of the earth," he said.

Rolling with it

Users took a pragmatic view of the slowdown and Informix's announcement.

"If Informix has to curtail development plans because it's under cash flow pressure and sales aren't enough to support development, then we'll be concerned. But users aren't concerned with drops in stock prices," said Roy Pfingsten, director of mortgage risk analytics at HomeSide Lending, a privately held mortgage company in Jacksonville, Fla.

"If the bad news doesn't result in a cut in support, we're not too concerned," said Informix user Maribeth Anderson, vice president of First Chicago/Mercantile Services in Chicago.

Briefs

AMD profits dive

Advanced Micro Devices, Inc. (AMD) is paying for its failure to roll out a Pentium-class chip earlier than last month. Sunnyvale, Calif.-based AMD's profits fell 70% in the first quarter of this year. The company's net income for the period between Jan. 1 and March 30 dropped to \$25.3 million, down

from the \$84.3 million it posted in the same quarter last year.

Novell backs off suit

After years of legal wrangling, Novell, Inc. appears to be backing off its claim that cut-rate upgrade software sold by a mail-order house is actually software made by Novell and is identical to higher-priced "origi-

nal" versions sold elsewhere. In a hearing in federal district court in Salt Lake City last week, Novell lawyers conceded that previous statements made against Network Trade Center (NTC) in Sandy, Utah, were "incorrect." Novell acknowledged that the "software is functionally the same; it's just that the upgrade license is priced substantially below the original license." NTC has contended for more than a year that this was true.



Microsoft

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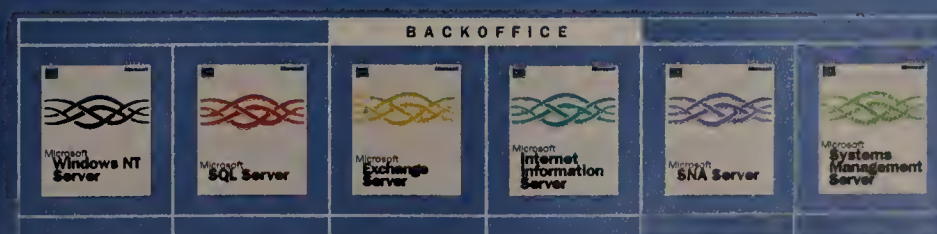
Rich mail. Embedded graphics. Unlimited enclosures. It seems users have had every indulgence software makers can think of. Isn't it time someone thought of your needs? We have. And we think you'll be relieved to learn that, finally, there's a truly reliable messaging server now shipping. One with all the performance, security, and tracking features an administrator could want.

Microsoft® Exchange delivers more messages faster and more reliably than any other mail or groupware system. It's also more secure. With built-in features like encryption and digital signatures, unauthorized access is all but impossible. There are also built-in tracking tools that let you locate messages anywhere in the system. And in the event your system ever loses connection, Microsoft Exchange will automatically identify the source, notify you, and even fix it. Most importantly, all of this is possible over any network – your intranet or the Internet.

Collaborative business solutions can also be deployed with confidence. With Microsoft Exchange's powerful messaging infrastructure, you'll have the required reliability for group scheduling, bulletin boards, and customer tracking applications. Administration and integration are equally uncomplicated. The entire system can be managed from a single desktop. And, unlike other systems,

Messaging Requirements	Microsoft Exchange Server v4.0	Novell® Groupwise 4.1	Lotus® Notes v4.0
Scalable to widest range of hardware*	YES	NO	NO
Integrated Centralized Management Tools	YES	NO	NO
Integrated Internet Access (SMTP/MIME)	YES	NO	NO
Integrated X.400 (1984&1988)	YES	NO	NO
Built-In Group Scheduling	YES	YES	NO
Built-In Groupware	YES	NO	YES

Microsoft Exchange's multi-protocol open architecture provides native SMTP- and X.400-support, so it can peacefully coexist with almost any e-mail system. It even has built-in migration tools for Microsoft Mail, cc:Mail™, PROFS®, DEC All-In-1™, and Verimotion Memo. So now you have every reason to make the move. And every assurance that it'll be worth it. To learn more, call (800) 426-9400, Dept. A234. Or visit our Web site at <http://www.microsoft.com/exchange>.



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Editorial

Apple's best bet

Apple CEO Gilbert F. Amelio's rumored plans to resuscitate the company may be the only hope for Apple to survive as an independent vendor. But I'm not sure the ideas will sit well with a lot of Macintosh users.

Amelio's recent comments, which were detailed in a widely circulated memo from an Apple employee, indicate that he sees Apple as a maker of high-quality products for discerning users who will pay a premium price to get the best. There's nothing wrong with that strategy. But it's a philosophy that puts Apple on the fringes of the market, where it will have to be content with influencing trends, not dictating them.

A lot of Apple boosters will have trouble with that. Part of their frustration with Apple's problems and its public image lies in their belief that if the rest of the computing world would only get with the program, people would buy Macintoshes in volume. But in order to succeed with a niche strategy, Apple can't plan on that. In fact, expecting people to buy Macs in volume is what got Apple into its current predicament. Its cost structure is way too high for a boutique market approach. Its marketing strategy is oriented toward mass audiences. Its appeal to third-party software developers relies on selling millions of boxes a year. All that will have to change if Apple is to execute effectively at the high end of the market.

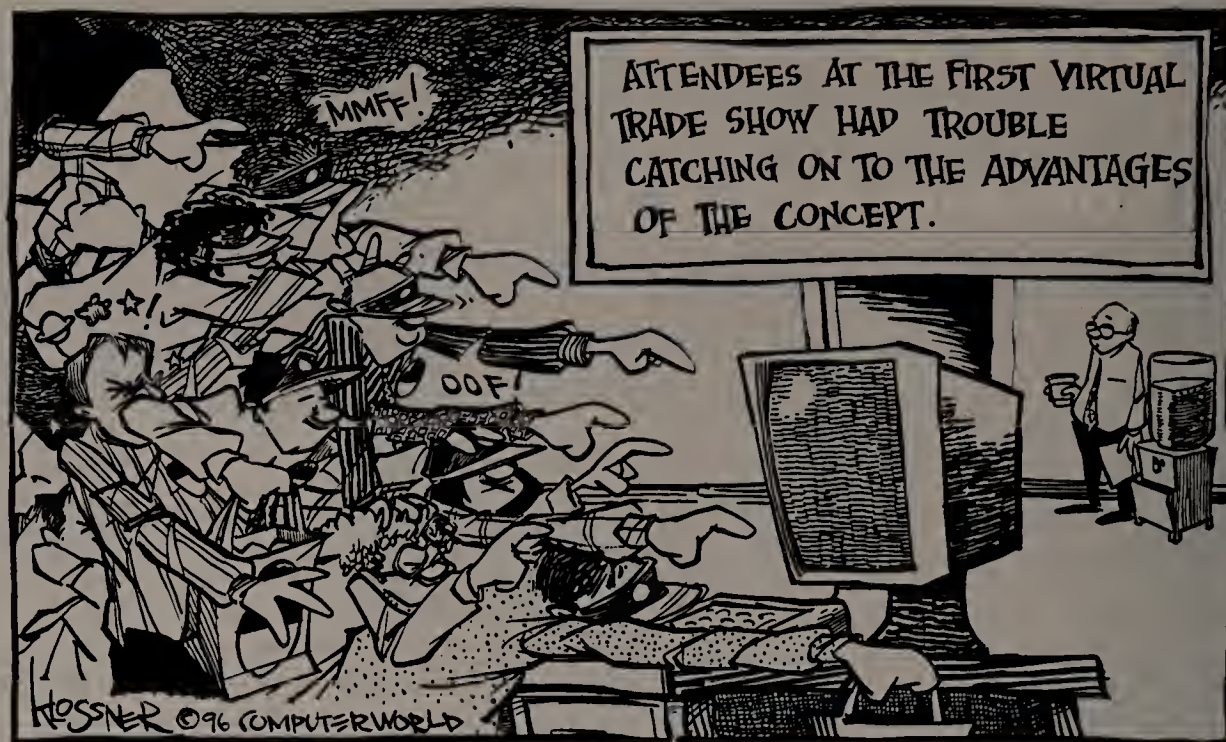
There may be little choice. The Mac's problems building critical mass — its market share has actually declined in the past year — have forced Amelio's hand. The company must niche itself.

The Macintosh is a fine product that can flourish in focused strongholds such as graphics, publishing, science and education. But for it to do so will require a fundamental rethinking of Apple's mission. Ironically, the survival strategy may forever forbid Apple from becoming, as its slogan used to say, "The computer for the rest of us."

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Paul Gillin, Editor
Internet: paul_gillin@cw.com
<http://www.ultranet.com/~pgillin>



Letters to the editor

Model management

I am confused. Articles such as "The sorry state of systems management" [Viewpoint, CW, March 4] seem to appear almost weekly, pinning ineffectual management of distributed systems on the impending demise of America's corporate information infrastructure. According to Patricia Seybold, "distributed systems are so badly managed, it's a wonder businesses function at all."

Yet, Fortune 500 companies such as U.S. Sprint, Ontario Hydro and Pratt & Whitney each have confronted enterprise management with their eyes open, knowing they had the formidable task of managing poorly planned information technology environments that had been cobbled together over the years. With the singular objective of delivering optimum service and availability to customers, each company took time to design a model center that could ensure availability in the enterprise first. Then they could define jobs according to requisite management functions. They also used technology to fit their models, rather than retrofitting their management centers to the available technology.

Viable lessons can be learned from successful information technology managers such as the ones at Sprint, Ontario Hydro and Pratt & Whitney, who designed their "next-generation" enterprise management centers, as opposed to pejorative opinions that leave information technology managers thinking they ought to design their next careers.

Jack Brown
Senior director
Boole & Babbage, Inc.
San Jose, Calif.

World Wide Wait

"At a cybercrawl" [CW, March 4] — what an understatement. In the past month, I have attempted four times to access the Web via a 14.4K bit/sec. dial-up connection. The response time has been so abominable that I've started going to the library to look things up in books and magazines.

The slow response hasn't been a function of my modem because the send- and receive-data lights were dark. The wait was due to conditions outside my hookup and beyond my control. Apparently, WWW now stands for World Wide Wait.

Fred Clark
Moraga, Calif.
fclark@800.dialiss.com

Open up the 'net

Paul Gillin's editorial regarding "AOL's sellout" to Microsoft [CW, March 18], combined with recent pronouncements about Microsoft's plans for the Internet, should lead us to insist on open standards for this area of technology.

The Microsoft way is to require a Windows 95/NT base for using its Internet-enabled products. Contrast this closed approach with what we could have with open standards — lots of competitive offerings that could talk to one another.

It is up to us, as consumers, to insist on it and to "vote" with our purchase orders and patronage.

Stanley Kritzik
Milwaukee
kritzik@ibm.net

Bank bungling

The point of the First Massachusetts Bank conversion fiasco ["No money, honey," CW, March 18] wasn't technical problems with the ATMs or with decrypting the personal identification numbers, but that the negative customer impact was almost totally preventable.

In my many years in banking software, I've never seen a conversion so badly handled. First, the PIN conversion could have easily been tested. Just convert a few and call to ask Shawmut if they are correct. PINs are "secure," but not that secure.

Second, top management made no provision for live customer telephone support. The listed number produced only a recording to call during regular business hours. By the time I could talk to a person, I was calling another bank to open a new account.

And finally, the Banknorth people are still explaining when they should be apologizing. Doing the conversion with inadequate testing and untested assumptions was questionable. Not having any live customer support was absolutely boneheaded.

David Olson
Castlerock Corp.
Stow, Mass.
ISCDavid@aol.com

More letters, page 40

Computerworld welcomes comments from its readers. Letters should not exceed 200 words and should be addressed to Paul Gillin, Editor, Computerworld, PO Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01701. Fax number: (508) 875-8931; Internet: letters@cw.com. Please include an address and phone number for verification.

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Bill Laberis

Bill and Ken: Spittin' into the wind

The comparison may sound dumb, but I'll make it anyway: Bill Gates today and Ken Olsen at the peak of Digital Equipment Corp.'s reign. Gates, like Digital's deposed founder, is having a lot of trouble containing his agitation with people who question whether his company is in danger of being drowned by the next wave of technology.

Comparisons between the two are irresistible. I clearly recall a press briefing in the mid-1980s, shortly after *Fortune* magazine featured Olsen on a cover emblazoned with the words "Entrepreneur of the Decade." Or was it century? No matter; Digital was riding the crest of the proprietary systems wave. Right behind it was a tsunami called open systems.

A reporter had the audacity to ask Olsen how Digital's VAX would fare in the emerging world of open systems. Olsen never answered the question. He quite publicly berated an excellent reporter with the brilliant rejoinder, "How can you ask such a stupid question?"

So it was with Gates at a recent developers conference. As reported in *Computerworld*, Gates laughed derisively when asked how Microsoft Corp. would fit in to the world being shaped by that next great tsunami, the Internet. The media wonks "overdramatize these things; that's your job," the increasingly aggravated Gates said.

Why is Bill so annoyed? There are at least two reasons. The first can be found in the news of

slumping PC sales, due in part to a corporate world that hasn't embraced Windows 95. That's a crushing blow to Microsoft's psyche, especially after the mother of all product launches last summer. There isn't enough value in Windows 95 to encourage companies to invest in retraining end users.

That's right — there isn't enough value in a premier Microsoft product. So upgrades to Pentium-class machines are slow. Corporations are waiting for Windows NT. If you don't think that is annoying to someone like Bill Gates, think again.

The second cause of Gates' perturbation is the Internet. In many ways, the Internet is antithetical to Microsoft's business model of producing low-cost, high-volume software in markets it controls. Microsoft doesn't control the Internet and never will. Not only that, it is being forced by Netscape and others into giving product away. How's that for trashing the business model that gave Microsoft a higher market value than IBM?

When you're as big as Microsoft and business is still growing like a weed on steroids, it isn't



Bill Gates (left), like Ken Olsen before him, has no patience for probing questions



easy to seriously consider forces of change that threaten your way of doing business. Ken Olsen never saw the light until it was too late for him and almost too late for Digital.

To give Gates his due, he showed savvy and some humility in licensing the Java language from rival Sun Microsystems. And he

has publicly stated that all parts of Microsoft will now cha-cha to the Internet tune. Ken Olsen 10 years ago said some nice things publicly about Unix but never matched the words with action.

Is Bill Gates smarter than he is arrogant? Certainly he is one of the smartest two or three people of the Information Age, and his company is one of its wonders. Maybe he's the entrepreneur of this decade, just as Olsen was of the last. But I just checked the calendar and realized how little time there is left before this decade is over.

Laberis, former editor of *Computerworld*, heads Bill Laberis Associates, a media consulting and contract publishing firm in Holliston, Mass. His Internet address is bill@laberis.com.

David Strom

Telcos dial 0 as Internet providers

With all the hoopla surrounding the entry of AT&T, MCI, Sprint and even some of the local Bells into the world of Internet service providers, you might be tempted to consider them seriously for your corporate access. The prices certainly look attractive.

But don't do it. "Data" is still a four-letter word for the telephone companies. You'll be better off with a more experienced provider such as Netcom, PSI or Uunet.

First off, what do you really want from your Internet service provider, anyway? There are three kinds of services:

- Pipelines. These connect to the Internet by making a local telephone call to an Internet service provider's modem in major U.S. or international cities. This is especially important for people who travel or work in remote offices.
- Content hosting. This is when the provider hosts various Internet-related services (such as electronic mail and World Wide Web services) on their computers and Internet connections, thus freeing your resources for other tasks.
- Identity. The Internet service provider has control over your corporate.com domain name, and thus your identity in cyberspace.

Frankly, you may be better off picking the right kind of service provider for each kind of service,

rather than putting all your eggs in one basket.

The best pipeline-oriented providers have lots of dial-up numbers in lots of cities. They keep an eye on what's happening with their networks to ensure you don't get a busy signal or — worse — no answer when you call. They have around-the-clock help lines staffed by humans, and they have a great deal of expertise running large, routed Internet Protocol networks and managing terminal servers.

"Data" is still a four-letter word for the phone companies.

The telcos' best hope

CompuServe, for example, knows pipelines. Its reach is truly global, with access numbers in most major countries, not to mention most major North American cities. This is a category the phone companies have a chance at cracking.

But it will take time for them to build their networks to the level of CompuServe, BBN or Uunet, just to name a few.

What about content hosting? To do well here, Internet service providers need different skills. They have staffers who know how to run Web and other Internet servers and can help you with your content-creation needs. The better content-oriented providers are often smaller than pipeline providers and have younger, hungrier staffs.

The phone companies don't have a chance in

this content market. You want a provider that can learn fast and move quickly. You want folks who are *creative* — a word not normally associated with the telephone companies.

Finally, there's the whole identity issue. You want a provider that is small yet close to the top of the Internet connectivity food chain. That means the provider is just a hop or two away from one of the Network Access Points on the national backbone, so your packets don't have far to travel. (You can easily figure this out by running Tracert, a route-tracing program that comes with Microsoft's Windows NT, to see how you are connected.)

Besides, you want to be able to call your provider's president when you need something done. After all, you would expect nothing less from your advertising agency or public relations firm when they represent your identity to the world at large. Do you know the president of the phone company or think you'll have any chance of getting through to that person?

So the final score is pretty grim for the phone companies. They have a chance in maybe one of three categories. They have a long way to go.

Strom maintains accounts on six different Internet service providers. He runs the Web Informant (<http://www.strom.com>), a World Wide Web site covering Internet and high-tech marketing issues, and a consulting firm in Port Washington, N.Y.



For Olsen, the problem was open systems. For Gates, it's the Internet.



Telephone companies can build pipelines, but they aren't nimble or creative.

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Technical Center

March 6th, 1996

Dear Client/Server Connection,

I am writing to express my satisfaction with the CS/8,000 product that Cadbury Beverages has recently purchased. While we were researching different methodologies for our Client/Server needs, CS/8,000 clearly stood out among competitive products. The 14 modules of CS/8,000 cover the full spectrum of the Client/Server world. At the same time, CS/8,000 is significantly less expensive than other methodology software products.

Cadbury Beverages has recently completed a Global EMAIL system using CS/8,000 to fully guide our development process. This EMAIL system allows employees to communicate effectively despite the diverse hardware and software platforms that are used at different sites.

We completed the project on time and significantly under budget. I attribute this success to the expertise, clarity, and structure that CS/8,000 provided throughout the project lifecycle. Our CS/8,000 site license enabled us to create Global EMAIL development standards utilizing CS/8,000's Standards Module.

The guidance of the CS/8,000 product was the most critical factor in the success of our project. We will continue to use CS/8,000 for future Client/Server projects. We look forward to a fruitful ongoing relationship.

Sincerely,

Kathryn Bundy
Process Leader, Information Management

HYATT
HOTELS & RESORTS

March 5, 1996

Mr. Marc Myers
Client/Server Connection, Ltd.
103 S. Bedford Rd., Suite 202
Mt. Kisco, NY 10549

Dear Marc:

I was first introduced to the CS/8,000 product over a year ago at a PC/Network exposition here in Chicago. I was very impressed with CS/8,000 and recognized immediately the impact this application could have at the corporate headquarters of Hyatt Hotels. We are currently in the process of planning a major migration of some of our legacy financial applications to a client/server environment and need help with the design and planning process — without spending thousands of dollars in consulting fees. Your product has empowered us to do this planning work in-house very quickly and at a fraction of the cost of outside consulting services. Since I am a heavy Microsoft Project user, I have been equally as impressed with the ease of integrating the CS/8,000 application with Microsoft Project.

Please pass on my appreciation and thanks to Cecil and Ajay for their patience and support during my evaluation and implementation of CS/8,000. I am looking forward to continued success with the CS/8,000 product and Client/Server Connection.

Sincerely,

David L. Todd
Director - Management Information Systems

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United States Department of State

Washington, D.C. 20520

April 2, 1996

Marc Myers
Client/Server Connection, Ltd.
103 S. Bedford Rd., Suite 202
Mt. Kisco, NY 10549

Dear Marc:

I wanted to take this opportunity to let you know how pleased we have been with our experiences with CS/8,000 and Client/Server Connection. Your consultations and personal attention to our account have been particularly satisfying and well beyond our expectations. We are in the process of completing the integration of our client/server based software development life cycle methodology into CS/8,000, a process that has turned out to be very straightforward due to the openness of the product. Your recommendations and support in this area were very helpful. Once completed we will be working through our methodology with a very powerful, yet intuitive process manager.

Given your company's rapid evolution from CS/7,000 to CS/8,000, the rapid development of CS/10,000 was not a complete surprise to me. However, what was a surprise were the enhancements made to an already rich environment. In particular, the project estimation capability is going to be tremendously beneficial to this organization. The approach you have taken with this system, in my opinion, will result in significantly improved project estimation over time while reducing the time required for us to develop these estimates. And, even more importantly it learns from previous projects and walks the manager through the process of developing the estimate, clearly a benefit to those of us who are neither experts in this difficult area nor perform this task on a routine basis. We are really looking forward to working with this new release.

Please pass on my thanks to your staff for the great telephone support we have received. It really is refreshing to call and have the phone *and* question answered.

Sincerely,

Paul W. Fisher,
Applications Development Manager
U.S. Department of State

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Viewpoint

Letters to the editor

CONTINUED FROM PAGE 36

Sorry kids, no extra \$

I'm sure that the "Timing is right for Cobol programmers," [CW, March 11] but not because "toddlers will receive Social Security

checks," as the chart indicates.

Our organization may run into problems because of the Cobol turn-of-century situation, but we will most certainly not just spit out checks to everyone born in the year 00. We pay out billions of dollars each month to millions of Social Security beneficiaries. Each one provides a good deal of evidence [of eligibility] in order to receive a monthly check. I hope you are no longer under the misconception that your government is go-

ing to be paying millions of dollars to newborns just because of a calendar change. Come on, please, give us a little credit.

Myron Elias
U.S. Social Security Administration
Washington Heights, N.Y.
myron.elias@ssa.gov

To remove any misunderstanding, the Social Security Administration has maintained computerized data about dates of

birth for decades. Because many of the people who receive our benefits were born in the 1800s, we have always had to worry about storing dates of birth with an indicator for the century in which a person was born. Therefore, toddlers will not be getting any windfalls come January 2000. Of course, those children who are entitled to benefits will continue to receive them in the next century.

Chris Murphy
Computer specialist
U.S. Social Security Administration
Baltimore
chris.murphy@ssa.gov

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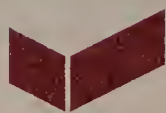
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Virtual commute

Softpac better realize that even if it succeeded in stopping all programmers from entering the U.S., it will not be able to stop programming jobs from going abroad ["Look before you leap," CW, March 4]. Telecommuting does not require visas, and the Caterpillar help desk arrangement described in the article confirms that.

As for me, I am looking forward to a day when commuting will be something like putting on virtual reality goggles. I could then live and work more or less where I want.

Rajendra Supnekar
Tinton Falls, N.J.
riveredge@exit109.com

IS women share views

I found your article on women in the high-tech industry very interesting [Ms. MIS, "From glass ceiling to glass slippers," CW, March 11]. For the past eight months, I have been working in a small software development company that my brother and some of his friends founded. I still answer most of the incoming calls and have noticed that very few women call, and most of the men who call are quite surprised to find that one of the "boys" in tech support is actually a woman.

I will be leaving for college this June and haven't really decided what I would like to major in. I am interested in learning more about IS management.

Noelle Vogt
Seattle
noellev@metainfo.com

After flipping through my latest issue of *Computerworld* and coming across Laura DiDio's column, I must say I am delighted to see one of the major trades devoting space to women in the business. Keep up the good work.

Jill Baldassi
IS officer
Ridgewood Savings Bank
Ridgewood, N.Y.
jbali@aol.com



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Staffing for the Future

A LEADERSHIP ROUNDTABLE

Building an IS team with the right combination of technical and business skills is one of the CIO's greatest challenges. How do you train and prepare your staff for an unknowable future? Five IS leaders from diverse backgrounds discuss how they are preparing for tomorrow.

BY BRUCE RAYNER

Meet the Roundtable



Carol J. Anderson is vice president of information technology at TTX Co. in Chicago. A 40-year-old private company owned collectively by a group of railroads, TTX buys and maintains flat cars and leases them to its owners — including Burlington Northern, Inc., CSX Transportation, Inc., Conrail, Inc. and Union Pacific Corp. — as well as non-owner railroads. “We are kind of like Hertz to the rail industry,” Anderson says. She has responsibility for about 80 information systems staffers, who are organized into two major groups: an application development staff and an operations staff.

Jean Claude Dispaux is senior vice president of information technology and logistics at Nestle S.A. Based in Vevey, Switzerland, the \$43 billion corporation consists of about 80 businesses worldwide. Nestle produces a variety of consumer products, from chocolate to pet foods, ice cream to mineral water to pharmaceuticals. Dispaux has direct responsibility for about 200 IS staff members at company headquarters. The remaining 2,500 or so IS professionals around the world report to IS managers at their local operating companies. Dispaux has a “heavy dotted-line relationship” with the IS departments at these operating companies. “All the budgets have to be reviewed and approved by us,” he says.



Alan Guibord is vice president of information technology at R. R. Donnelley & Sons Co., Chicago. At \$6.5 billion in annual revenue, the 135-year-old company is the world's

This year it's the Internet. Next year, who knows?

Absent a crystal ball, the chief information officer's job of keeping up with technological change is, at best, a seat-of-the-pants proposition. Yet, that is exactly what the executive committee expects of the CIO. With the future uncertain, planning the staffing requirements of the information systems group is possibly the toughest job any IS leader faces.

Says Jean Claude Dispaux, senior vice president of information technology and logistics at Nestle S.A. in Vevey, Switzerland: “I can't train my staff on technology that is not here yet. The way technology is changing today, you try to keep up; you can't really anticipate it.”

To gain some insight into how to keep up, *Computerworld* tapped five respected IS leaders, including Dispaux. While none of them claims to have definitive answers to the staffing issue, they share some attitudes and strategies on how to move forward. Their insights might prove useful to others grappling with the same problems.

Hire buyers, not makers

As for major trends, the five IS leaders agree that the days when the IS department spent most of its time creating custom applications are over. Instead of inventing solutions, the IS group is taking on the role of adapting third-party solutions to meet the internal business user's needs. This shift in mission has profound effects on staffing.

“Where a package can solve a key need, we are going to buy it,” says John Stevenson, vice president, information

technology, at Lennox International, Inc. in Richardson, Texas. “The skill sets change quite a bit from knowing how to code a structure to knowing the business environment that the package should support. The old title ‘programmer analyst’ becomes ‘business analyst’ — with ‘analyst’ being the key word and ‘business’ being the process change that we are going through. A business analyst is probably going to be the most important employee that I have in the future.”

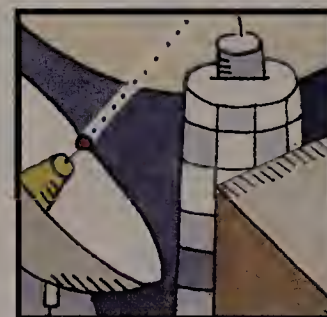
Stevenson points to Lennox's roll-out of SAP AG's R/3 this year as an example of the shift. “About 70% of what

a SAP environment does is shift your focus from code writing to understanding the business process. You need to know how the business processes work and then lay that down into the business process model that the software package brings to you. That is a different skill set.”

Nestle's Dispaux echoes Stevenson: “We are moving from an IS department that delivers systems to an IS department that delivers systems and an infrastructure, such as stan-

dardized PCs or a global communications network. What we need are project leaders and high-level technologists. I want as few programmers as possible.”

Dispaux's project leaders work closely with users, and they do so for the long haul. They must understand users' business needs and then either buy a software package or subcontract the work to a third-party vendor. A good project leader, he says, has been schooled in both IS and business, has



**“THE WAY TECHNOLOGY
IS CHANGING TODAY,
YOU TRY TO KEEP UP;
YOU CAN'T REALLY
ANTICIPATE IT,” SAYS
NESTLE'S DISPAUX.**

Illustration by Robin Jareaux

worked in the business, not just on the IS side, and has overseas experience.

As for high-level technologists, these are people who can resolve a highly technical problem such as choosing between Microsoft Corp.'s Windows NT or Windows 95 for the desktop. "Resolving doesn't mean doing the job; it may mean talking intelligently to Microsoft or the Gartner Group and buying or recommending the right product," Dispaux says.

"Fewer and fewer of our big companies want to maintain, say, a high-powered telecommunications team. They need a telecommunications operator, but when it comes to a real technologist, they would rather turn to Nestle headquarters for a standard. If the standard does not quite fit their requirements, or it needs to be adjusted, we work together on that."

Changing hearts and minds

Of course, changing the skill requirements and demanding business acumen from the IS staff is easier said than done. Hiring IS professionals with MBAs is part of the solution. But constantly re-educating and retraining the existing technical staff is where IS leaders need to spend most of their time.

Darwin A. John, managing director of information and communications systems at the Church of Jesus Christ of Latter-day Saints, views the challenge philosophically: "If you want permanent change in an individual, you change their mind-set or you change their heart. We talk about dealing with whole people vs. skilled hands. Capability building is an investment. It's not like training, which is an expense."

John has developed a set of five principles that he "lives and leads his IS

staff by." They are the foundation on which he builds capabilities:

- **Alignment.** The world does not revolve around IS, so IS must align itself with the mission of the enterprise.
- **Obsession with quality service.** Deliver the best possible solutions with the highest level of quality possible.
- **Responsible leadership.** Lead the IS organization so it is capable of making responsible and informed choices.
- **Respect and trust-based relationships.** Create an environment based on trust and respect, where people can talk about things openly.
- **Personal excellence and self-reliance.** Maintain a commitment to continual personal improvement, learning and growth.

John's capability building currently is focused on creating a staff that can build and support a worldwide communications infrastructure and roll out client/server applications. Because he hires only members of the Mormon Church who are in good standing, his ability to motivate people and reward good work differs a bit from the corporate world. "Pay is competitive at the lower-level jobs, but for the more senior-level jobs, the curve flattens out very quickly," he says.

Instead, motivation comes from two things: "First, people are here because of the cause, they connect with the enterprise. Second, we strive very hard to create a learning environment where individuals can grow and build capabilities, so they are limited only by their own choices."

The philosophy works, in part, because John hires selectively. "Usually we are not going after a body, but we are going after a specific capability. We usually hire people with experience and proven track records." John also em-



**"A BUSINESS ANALYST
IS GOING TO BE [MY]
MOST IMPORTANT
EMPLOYEE," SAYS
LENNOX'S STEVENSON.**

largest commercial printing operation. Much of Donnelley's growth in recent years has been through acquisition, especially overseas. Integrating these acquisitions is a major focus for Guibord. He is involved in transforming the business from an old-line printer to a totally digitized operation, which is causing a lot of upheaval for employees. Guibord is responsible for corporate IS and telecommunications, which includes about 350 people — 75 in Chicago and the remainder in various business units around the world.

Darwin A. John is managing director of information and communications systems, Church of Jesus Christ of Latter-day Saints in Salt Lake



City. John oversees the Mormon Church's worldwide IS function, including a staff at headquarters that serves the U.S. and Canada, as well as support staff in a dozen countries. In addition to dealing with standard business applications, John's department supports the church's global missionary network, including communications with 350 missions. He also supports the church's genealogy service, which has one of the largest family-record databases in the world.

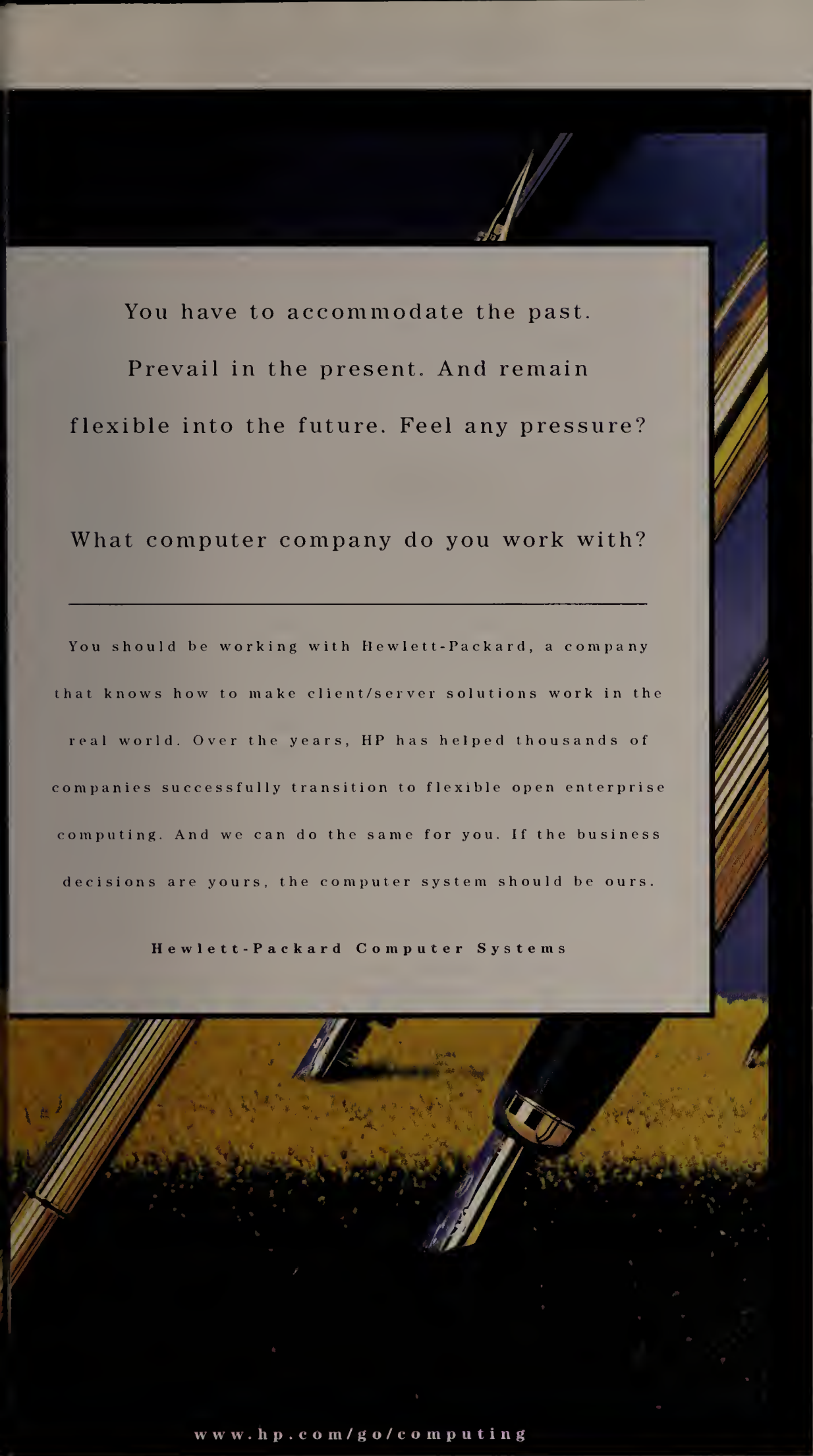


John Stevenson is vice president, information technology, at Lennox International, Inc. in Richardson, Texas. A privately held company, Lennox

has three divisions: Lennox Industries, Armstrong Air Conditioning, both of which produce heating and air-conditioning equipment, and Heatcraft, which makes parts to service refrigeration and heating systems. Stevenson has responsibility for a core IS group of about 110 people, which serves Lennox Industries and about half of Heatcraft. His staff also supports corporate voice and data communications needs. The other half of Heatcraft, as well as Armstrong, have their own IS staffs.



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Global R&D initiatives

When he joined Nestle S.A. five years ago as senior vice president of information technology and logistics, Jean Claude Dispaux created a team of eight senior information technology managers who are his eyes and ears around the world.

It is Dispaux's way of maintaining "dotted-line" control of the global IS and logistics infrastructure in a decentralized, federated organization. It is also Dispaux's way of gathering data on technology trends from the field, which helps him plan for the skills that Nestle's IS department will need in the future.

Alan Guibord, vice president of information technology at R. R. Donnelley & Sons Co., takes a similar approach. He has created a research and development group that studies a range of computing and communications developments and recommends implementation. The group also serves as a window for identifying skills Guibord will need to develop in his IS department.

Known as the Coordination Group, Nestle's IS Swat team works with operating units around the world. Its head, Olivier Gouin, reports directly to Dispaux at company headquarters in Vevey, Switzerland.

Every member of the Coordination Group has worked for many years at Nestle, and Dispaux tries to limit tenure on the team to no more than three years. The group is international in composition. Currently, there is one Frenchman, a Spaniard, a Canadian, an American, an Italian and three Swiss — one French-speaking and two German-speaking.

Guibord's group at Donnelley consists of 18 people. Currently, it is studying the Internet, advanced messaging, remote computing and high-bandwidth communications, such as Asynchronous Transfer Mode.

Every quarter, the group assembles a handful of vendors to address trends and discuss Donnelley's specific technology needs. At the last meeting, Donnelley hosted eight telecommunications vendors. The company plans to invite computer hardware vendors to the next meeting.

employs interns from the universities in Utah. "That has turned out to be an excellent source of talent," he says.

Teaching new tricks

Carol J. Anderson, vice president of information technology at TTX Co. in Chicago, also makes a distinction between skill training and capability building; TTX is doing both. But she points out that even in some technical training, resistance from professional staff is to be expected. The reason is the employee's attitude toward change.

Like old dogs, some IS professionals are unwilling to learn new tricks. But to be successful, Anderson says, "they must accept that if they learn a new skill like [using Powersoft Corp.'s] PowerBuilder, that is not going to be the last thing they will ever need to know."

TTX's success at initiating change has been mixed. "I'd like to say that our IS staff all think that the new client/server environment is great because they are intellectually challenged. But there were a lot of skeptics when we started 2½ years ago. They'd ask, 'Are we really doing this? Are we serious?'" she says.

During the client/server rollout, Anderson's strategy included repeating the message until everyone accepted that the change was indeed real. It also included a more flexible approach to training. "There is not one approach to training that is right for everybody. The training and some of the approaches to training need to be customized."

To this end, Anderson's management staff has laid out a personalized development plan for each employee and tailors a training program to fit the employee's needs. The training has both technical and busi-

ness components. The technical segment includes computer-based training, and the business training includes formal course work covering general business concepts, business writing and knowledge of business functions specific to the company.

One focus of the business component is customer service. "IS professionals are encouraged to take courses that get them thinking about customer service. They have a combination of... theory supplemented with some role playing so that they can actually gain experience in dealing with irate customers," Anderson says.

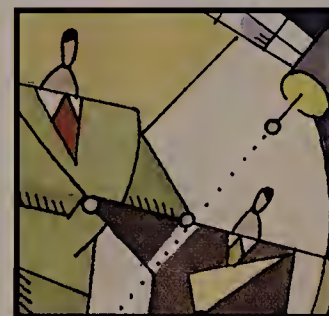
In addition, she sends first-level managers to "management interchanges" sponsored by a local facilitator. "You can usually find the technical courses or the management courses, but at that first level of management, you don't find many good opportunities for people to get together and discuss technology topics from a management perspective. That's been a great assistance to us."

When hiring, Anderson looks specifically for good communication skills, both oral and written. "We are not looking for the techie who can't go out and talk to people in the business unit."

As part of the interview process, the candidates provide a writing sample. "It is very tough to assess written communication skills," Anderson says, "but it's been a big help to see how they organize their thoughts."

Change mode

Rapid change also has permeated R. R. Donnelley & Sons Co., as the publishing giant grapples with the digital age. "There has been minimal change 'til now," admits Alan Guibord, vice president of information technology, who



"CAPABILITY BUILDING

IS AN INVESTMENT,"

SAYS THE MORMON

CHURCH'S DARWIN JOHN.

Focus on the Middle Sphere

According to John Stevenson, vice president of information technology at Lennox International, Inc., there are three kinds of IS professionals: "Those who can transition from code writing to business analyst without any training, those who will never transition and the middle sphere."

It is the middle sphere that requires the most attention, Stevenson says. "They are the ones that we've got to figure out how to get just the right style of training, so they can become adept and successful in the late '90s."

Some of that training involves formal courses, but much is on-the-job, he says. "We tell them, 'Put down your pencils and pick up your pen. You are going to go live with your customers, you are to spend time working the business processes out with your customers in the internal departments.'"

"For the most part," he says, "the on-the-job training has a 50% chance of succeeding on its own with this middle group. Others will need some facilitated training either from the outside — university courses, for example — or from a very astute person inside the business unit."

has been with the company for about a year. "But now, we are introducing new financial, customer service, content management, distribution and manufacturing systems in a move to become totally digitized. From the individual employee's perspective, we are now into a high-change mode."

To facilitate change, Guibord has a very formal development plan for each IS employee, complete with an on-line training database. This includes the employee's company-supplied training courses, a tuition reimbursement program and any individual initiatives that the employee develops with his or her supervisor. Donnelley's in-house training budget for each IS staffer averages about \$1,500 a year.

Using a medical metaphor, Guibord says his goal is to build a group of "general practitioners." This includes an IS staff skilled in client/server technology, database, data warehousing and data mining applications. "We will bring in brain surgeons when we need them on a contractual basis," he says.

Guibord admits that "finding people with good business skills is the biggest challenge." To drive home the importance of understanding the busi-

ness, he began giving his employees quizzes approximately six months into his tenure at Donnelley. "I figured they should know at least as much about the business as I do," he says.

And to educate his managers about the business, Guibord convenes the meeting of the 12-member IS management team at a different Donnelley site every month. "During these meetings, we meet with the local business unit's senior management to get an understanding of the operation," he says.

Mentoring for the future

Guibord's focus on staff development includes a mentor program, in which he pairs an experienced manager with a promising new IS staffer. The program taps IS and non-IS managers alike and provides a mechanism for employees to learn first hand from others' experience.

The Mormon Church employs a variation on the mentor theme. Throughout the organization, there

are formal "centers of excellence" — in IS, for example, there is a Project Managers Center and a Systems Programmers Center — that work to strengthen employee capabilities, John says.

The centers are led by people considered to be among the best in their particular disciplines, who have excellent human relations skills. Working one-to-one, center managers identify an employee's strengths and then talk about what skills the employee needs to work on. They also talk about how to change old ways of doing things that are getting in the way of development.

For example, if an individual is having a hard time working with others on the team, the center leader provides feedback and counseling to help the individual improve his team interactions.

Action items

No one IS leader has a corner on good ideas. Here are some ideas you might want to consider implementing:

- Develop staff with strong business and communication skills.
- Formalize the learning process, and make it part of the job.
- Communicate over and over that change is here to stay.
- Commit to a mentoring program, tapping IS and non-IS mentors.
- Set up an IS research and development group that scans the horizon for future skills requirements.
- Most important, develop a set of principles by which you will live and lead your staff. Broadcast it and be consistent. ♦

ABOUT THE AUTHOR

Bruce Rayner is *Computerworld's* editor of special projects. In addition to editing the monthly IS Leadership Series, his responsibilities include the *Premier 100*, *Best Places to Work* and *Global 100* magazines and a host of other special issues. For this article, Rayner conducted a roundtable with a group of five IS leaders, all of whom are members of the Society for Information Management (SIM). *Computerworld* is grateful to SIM for helping to convene the group. Rayner can be reached at bruce_rayner@cw.com.



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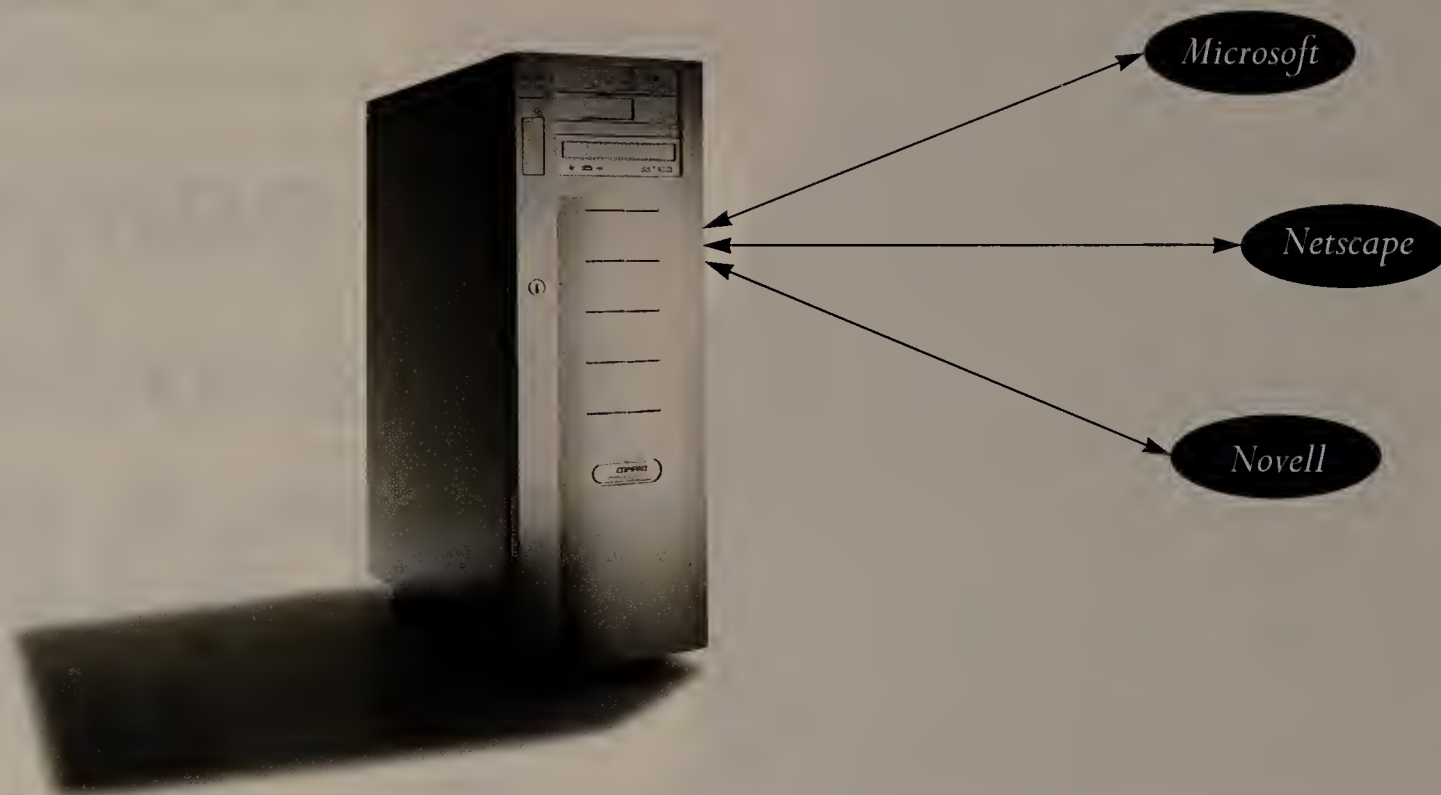
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Ultra 1 keeps users revolving around Sun Microsystems, 49

Servers & PCs

45

Servers & PCs

Making the Web a safer place

Joint venture to build coded modules

By Jaikumar Vijayan

The most recent effort to make the World "Wild" Web a safer place for corporate commerce draws on years of electronic commerce experience.

Atalla, a subsidiary of Tandem Computers, Inc., and specialty chip maker VLSI Technology, Inc. will team up to create chips with Atalla's hardware-based cryptographic technology. Banks and retail outlets have used the technology for years.

The hardware-based data encryption products will be aimed at making electronic commerce applications secure over the Internet.

"The advantage of separating [encryption functions] from

the operating system and the server and putting [them] in a separate proprietary box" is that the code is much harder to break in to, said Ted Julian, an analyst at International Data Corp. in Framingham, Mass.

Typical software-based data encryption involves applications that are executed on the World Wide Web server under standard operating systems such as Unix and Microsoft Corp.'s Windows NT.

In the agreement to be announced today, Atalla and VLSI will build specialized platform-independent hardware modules that contain cryptographic code. These modules can be attached as peripheral devices to standard Web servers. Multiple Internet applications can access the code in the modules to

carry out functions such as data encryption, data authentication and message integrity.

Any attempt to break in to an Atalla/VLSI box will instantly "zeroize" the data in the box and render it useless, an Atalla spokesman said.

Using hardware-based data encryption should speed up Internet commerce, said Gary Sabo, vice president of the Internet group at San Jose, Calif.-based Atalla.

Data encryption

The speed factor

Because the computationally intensive encryption functions are off-loaded from the server to a separate special-purpose hardware module, the server's CPU is free to carry out other tasks, he said.

"Hardware solutions will be inevitable for those who are processing large volumes of en-

rypted data," said Steve Crocker, senior vice president of development at CyberCash, Inc. in Reston, Va., a developer of Internet payment software.

"My hope is that the joint venture will result in very cost-effective, high-capacity products" for securing Internet commerce transactions, Crocker said.

Both companies last week declined to comment on pricing. Prices for Atalla's current hardware-based encryption products start at about \$12,000.

Under the companies' joint development deal, Atalla will provide secure firmware for memory management and software to support security protocols and technology.

VLSI will incorporate several application-specific security and logic functions in specialized chips.

The first products developed

Security 'net

Hardware-based security for Internet commerce from Atalla and VLSI Technologies:

ADVANTAGES:

Increased security – Cryptographic functions are located in separate, secure special-purpose hardware.

Improved performance – Off-loads computationally intensive cryptographic functions from Web server, thereby enhancing response times.

HAZARDS:

System penetration – An active attack on the hardware can obtain sensitive data such as the cryptographic keys.

Modification – Unauthorized alteration of the functional or physical characteristics of the hardware.

Substitution – Unauthorized replacement of a module with another containing modified cryptographic functions.

under the joint effort will hit the market by year's end, officials from the companies said.

By Bob Francis

Want to see your company's next PC? Check out your kid's Game Boy.

Corporate desk jockeys won't be playing Tetris, but PC vendors hope Game Boy's easy-to-use features will translate into fewer headaches for PC buyers.

That was the message at Microsoft Corp.'s Windows Hardware Engineering Conference (WinHEC) in San Jose, Calif.

WinHEC, where Microsoft tells the converted what it will do down the road, saw the company unfold its plan for a Simply Interactive PC (SIPC) (see related story, page 49), among other things. Game Boy was one of the places to which Microsoft looked for inspiration.

1394 spec

One idea Microsoft cribbed from Game Boy was the connector for the 1394 specification, which the Redmond, Wash.-based software company expects to use for high-speed data transfers for multimedia applications in the home. But the same connector eventually

Microsoft wants to keep it simple

Microsoft introduced the following capabilities to its Simply Interactive PC strategy



1394 Connector: 400M byte/sec. standard that attaches to high-speed channels and printers. May be used for storage devices and LANs.

Universal Serial Bus: 12M byte/sec. standard that replaces printer and mouse ports. Works with digital audio, game controls and phone/answering machine.

Service bay: Replaces internal bays, disk drives and CD-ROMS.

1394 Connector: For cameras and audiovisual applications.

may also be used for storage devices, network connections and videoconferencing in corporate applications.

"These are the kinds of things we'd like to see immediately. I hope the industry can move quickly to give us some of these tools," said J. Matthew Merrick, vice president of information systems at The Merrick Publishing Co. in Louisville, Ky.

The SIPC and the changes Microsoft plans to make in driv-

ers and software should make PCs easier for corporate users to manage at the desktop and remotely — and easier to use. Both goals should be possible at current PC prices, systems vendors said.

Some of those management and ease-of-use features also are included in Plug and Play, Microsoft's current effort to make PCs as easy to configure as Apple Computer, Inc.'s Macintosh. But future PCs may need to go beyond Plug and

Play because the PCs will be used for more high-powered applications, such as multimedia, video and data mining.

"Third-party vendors are just getting Plug and Play into their products, so we haven't really seen what it's going to do for the industry yet," said Martin Reynolds, an analyst at Dataquest, Inc., a research company in San Jose, Calif. Reynolds said Plug and Play will have difficulty moving beyond its current specification. A new speci-

fication may be needed, he said.

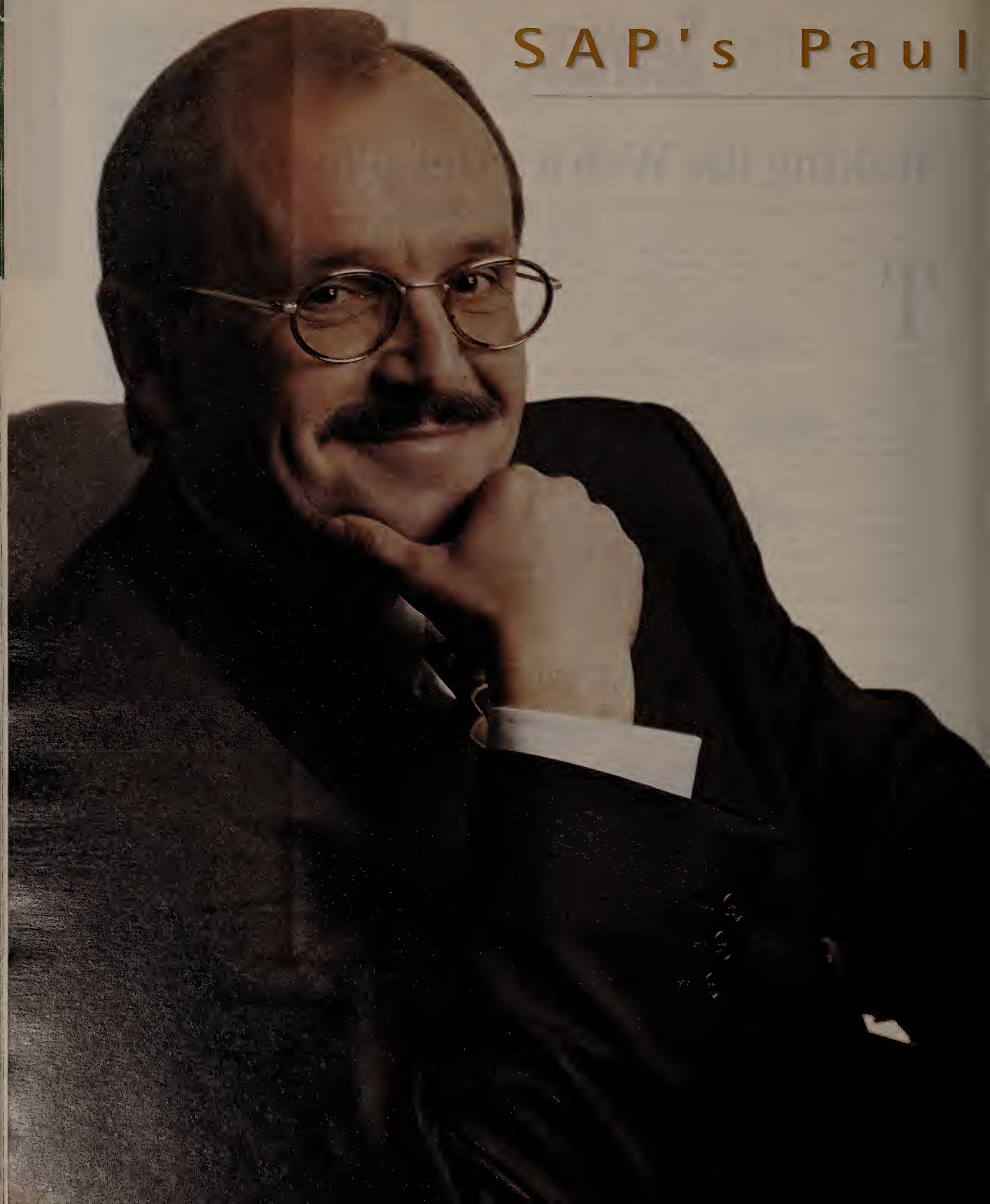
Although Microsoft gained industry support for Plug and Play, it was a difficult road to build, and the going may not get any easier for SIPC, said Dwight Davis, editor of "Windows Watcher," an industry newsletter based in Redmond, Wash.

"It's a chicken-and-egg thing. You need coordination [among] the hardware, the BIOS and the operating system for this to work, so it's always tough because no one wants to go first," Davis said.

The focus of ease-of-use was on home PCs, but hardware makers expect to see ease-of-use features make their way into corporate boxes, too. The management features expected in next-generation boxes should cut corporate costs for managing and refitting standard desktops.

"Corporate users will see the benefits of this as the industry begins delivering these features," said Chris Peterson, a strategy planner for Hewlett-Packard Co.'s home desktop line.

SAP's Paul



Wahl, on Informix.

Paul
Wahl
CEO, SAP
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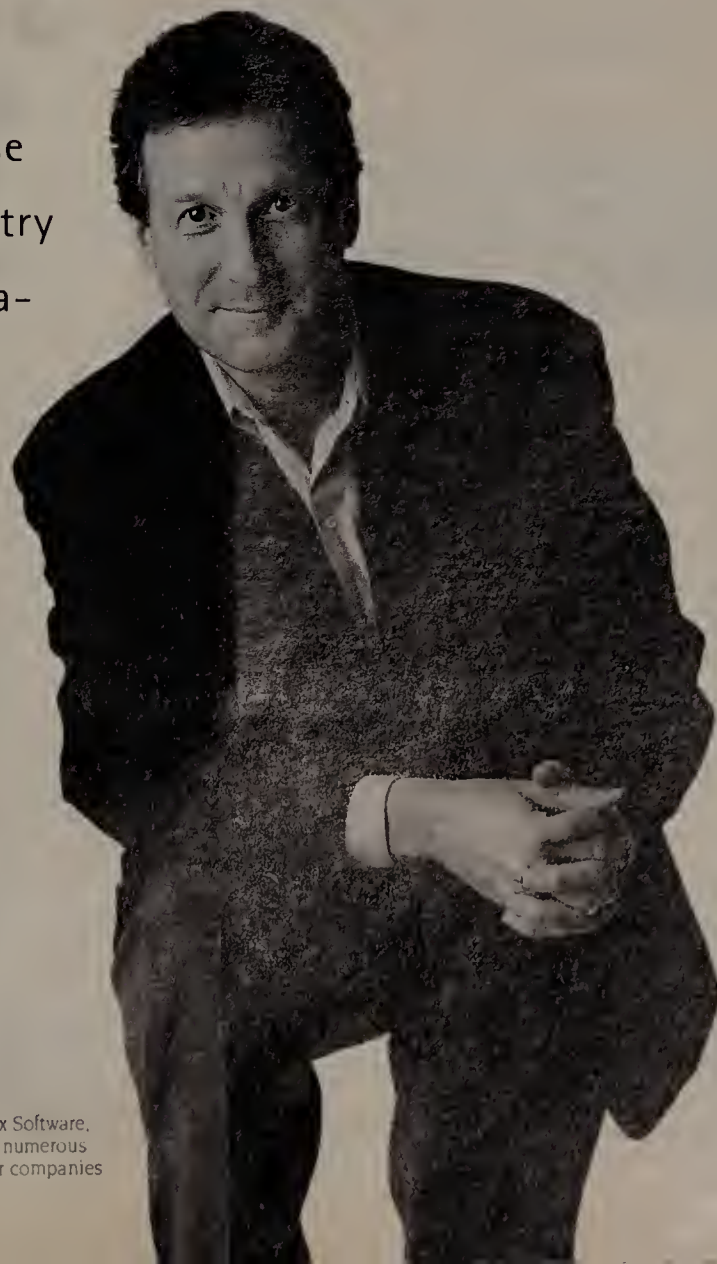
Eric Miles
VP Servers &
Connectivity,
Informix

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WEEK 13 OF 19



COMPUTERWORLD's

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2. Enter the page number containing the correct answers via COMPUTERWORLD's Web site on the Internet:
<http://www.computerworld.com>
3. On the Web site Entry Form, identify the page number in this week's issue of COMPUTERWORLD where the correct answer to each TechnoTrivia question appears.
4. Or you may enter by fax using the Fax Entry Form below.

Trivia questions and answers provided and/or verified by Christopher Morgan and The Computer Museum.

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Question #	Correct Answer on Page #
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4.	
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FORM FOR
WEEK 13**

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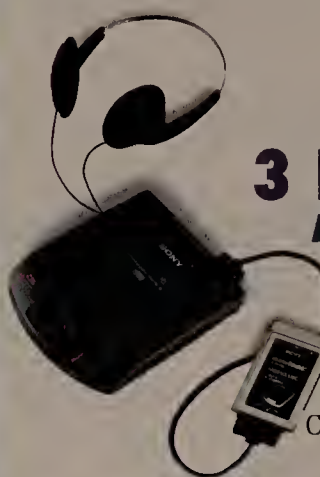
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5 GRAND PRIZE WINNERS

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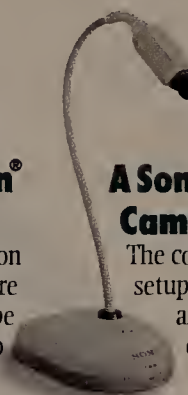
Win a 4-day cruise to the Bahamas for two aboard Carnival Cruise Lines. While onboard, all five winners will be awarded a new AcerNote™ Light notebook with Pentium® processor — plus a treasure map with all the clues you need (if you're really quick) to solve the ultimate TechnoTrivia puzzle and earn a \$5,000 cash reward!



3 FIRST PRIZES

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5 SECOND PRIZES

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Grand, First and Second Prize Winners will be announced by July 15, 1996.



1 Sony Magic Link™ Personal Communicator

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5 Dunkin' Donuts "TechnoTrivia Tuesday" Coffee Breaks

Each Tuesday five winners and their associates (up to 20 people) will receive Dunkin' Donuts gift certificates for 3 dozen donuts, a Dunkin' Donuts coffee thermos, a pound of ground coffee plus an engraved TechnoTrivia plaque.



Please pass along this issue of COMPUTERWORLD to an associate after you have finished playing the game.

SUPER PRIZES AWARDED EACH WEEK!

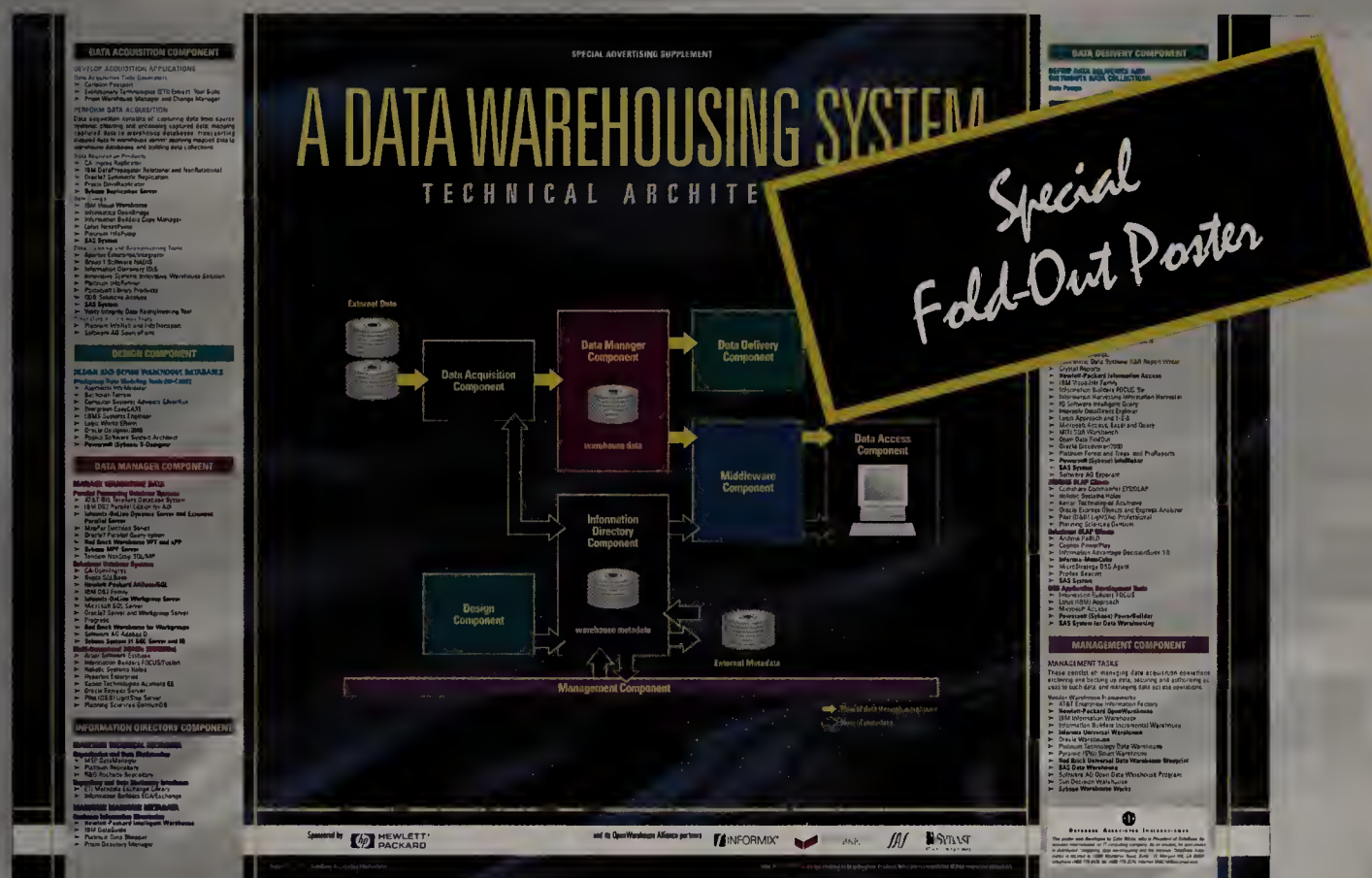
This Week's TechnoTrivia Questions

Find the answers in this issue of Computerworld

1. What computer company did the title character in the movie *Forrest Gump* invest in?
2. Researchers at Georgia Tech are using virtual reality techniques to treat what disorder?
3. Borland founder Philippe Kahn plays what musical instrument in his spare time?
4. Some say the first "personal computer" was used by MIT hackers, filled one small room and cost \$3 million. What was it called?
5. In addition to black and white, how many colors are in the Apple logo?

NO PURCHASE REQUIRED. This offer is governed by a complete set of Official Rules, published on COMPUTERWORLD's web site at <http://www.computerworld.com>. To receive a written copy, send on SASE to COMPUTERWORLD's TechnoTrivia Rules, P.O. Box 4051, Marblehead, MA 01947. Find the five correct answers to the TechnoTrivia questions in each issue and complete the entry form by entering the page number where you find the correct answer to each corresponding question. Play all 19 weeks and increase your chances of winning a weekly prize or one of 13 exciting final prizes. One entry per person per week. TechnoTrivia is open to residents of the U.S. 18 years of age or older who are 15 professionals — except employees of companies that manufacture, distribute or resell computers and computer related equipment, employees and their families of International Data Group, Inc. (IDG), their affiliates, subsidiaries, their advertising and production agencies as well as other publishing companies serving the computer or high technology industry. Weekly and final prize winners will be selected at random from among all those submitting correct answers. Sweepstakes drawings will be conducted by MILL HOUSE McCABE, INC., an independent judging organization, whose decisions are final in all matters relating to this offer. Weekly entries must be received by 11:59 pm on Thursday following the publication of each issue of COMPUTERWORLD. All entries eligible for the Final Prizes must be received by 11:59 pm, Friday, June 3, 1996. Void where prohibited. Acer and the Acer logo are registered trademarks and AcerNote is a trademark of Acer America and Acer Inc. Pentium is a registered trademark of Intel Corporation.

A DATA WAREHOUSING SYSTEM TECHNICAL ARCHITECTURE



Inside is a fold-out poster displaying the key components of a data warehouse system.

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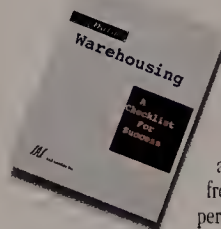
Once data arrive in the warehouse, an arsenal of capabilities is available for querying, analyzing, and reporting on that data.

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■ Parallel Loading/Indexing	■ Intuitive Data Warehouse Management
■ Parallel Sorts and Joins	■ Open Warehouse Consulting Methodologies
■ Parallel Inserts/Deletes/Updates	■ Years of Data Warehousing Experience
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■ Database Partitioning	
■ Complex Data Management	
■ Relational OLAP	

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DATA ACQUISITION COMPONENT

DEVELOP ACQUISITION APPLICATIONS

- Data Acquisition Code Generators
 - Carleton Passport
 - Evolutionary Technologies (ETI) Extract Tool Suite
 - Prism Warehouse Manager and Change Manager

PERFORM DATA ACQUISITION

Data acquisition consists of: capturing data from source systems; cleaning and enhancing captured data; mapping captured data to warehouse databases; transporting mapped data to warehouse server; applying mapped data to warehouse databases; and building data collections.

Data Replication Products

- CA-Ingres Replicator
- IBM DataPropagator Relational and NonRelational
- Oracle7 Symmetric Replication
- Praxis OmniReplicator
- Sybase Replication Server

Data Pumps

- IBM Visual Warehouse
- Informatica OpenBridge
- Information Builders Copy Manager
- Lotus NotesPump
- Platinum InfoPump
- SAS System

Data Cleaning and Reengineering Tools

- Apertus Enterprise/Integrator
 - Group 1 Software NADIS
 - Information Discovery IDIS
 - Innovative Systems Innovative-Warehouse Solution
 - Platinum InfoRefiner
 - Postalsoft Library Products
 - QDB Solutions Analyze
 - SAS System
 - Vality Integrity Data Reengineering Tool
- Other Data Acquisition Tools
- Platinum InfoHub and InfoTransport
 - Software AG SourcePoint

DESIGN COMPONENT

DESIGN AND DEFINE WAREHOUSE DATABASES

Workgroup Data Modeling Tools (W-CASE)

- Asymetrix InfoModeler
- Bachman Terrain
- Computer Systems Advisers SilverRun
- Evergreen EasyCASE
- LBMS Systems Engineer
- Logic Works ERwin
- Oracle Designer/2000
- Popkin Software System Architect
- Powersoft (Sybase) S-Designer

DATA MANAGER COMPONENT

MANAGE WAREHOUSE DATA

Parallel Processing Database Systems

- AT&T GIS Teradata Database System
 - IBM DB2 Parallel Edition for AIX
 - Informix-OnLine Dynamic Server and Extended Parallel Server
 - MasPar Decision Series
 - Oracle7 Parallel Query option
 - Red Brick Warehouse VPT and xPP
 - Sybase MPP Server
 - Tandem NonStop SQL/MP
- Relational Database Systems
- CA-OpenIngres
 - Gupta SQLBase
 - Hewlett-Packard AllBase/SQL
 - IBM DB2 Family
 - Informix-OnLine Workgroup Server
 - Microsoft SQL Server
 - Oracle7 Server and Workgroup Server
 - Progress
 - Red Brick Warehouse for Workgroups
 - Software AG Adabas D
 - Sybase System 11 SQL Server and IQ
- Multidimensional DBMSs (MDBMSs)
- Arbor Software Essbase
 - Information Builders FOCUS/Fusion
 - Holistic Systems Holos
 - Hyperion Enterprise
 - Kenan Technologies Acumate ES
 - Oracle Express Server
 - Pilot (D&B) LightShip Server
 - Planning Sciences GentiumDB

INFORMATION DIRECTORY COMPONENT

MAINTAIN TECHNICAL METADATA

Repositories and Data Dictionaries

- MSP DataManager
 - Platinum Repository
 - R&O Rochade Repository
- Repository and Data Dictionary Interfaces
- ETI Metadata Exchange Library
 - Information Builders EDA/Exchange

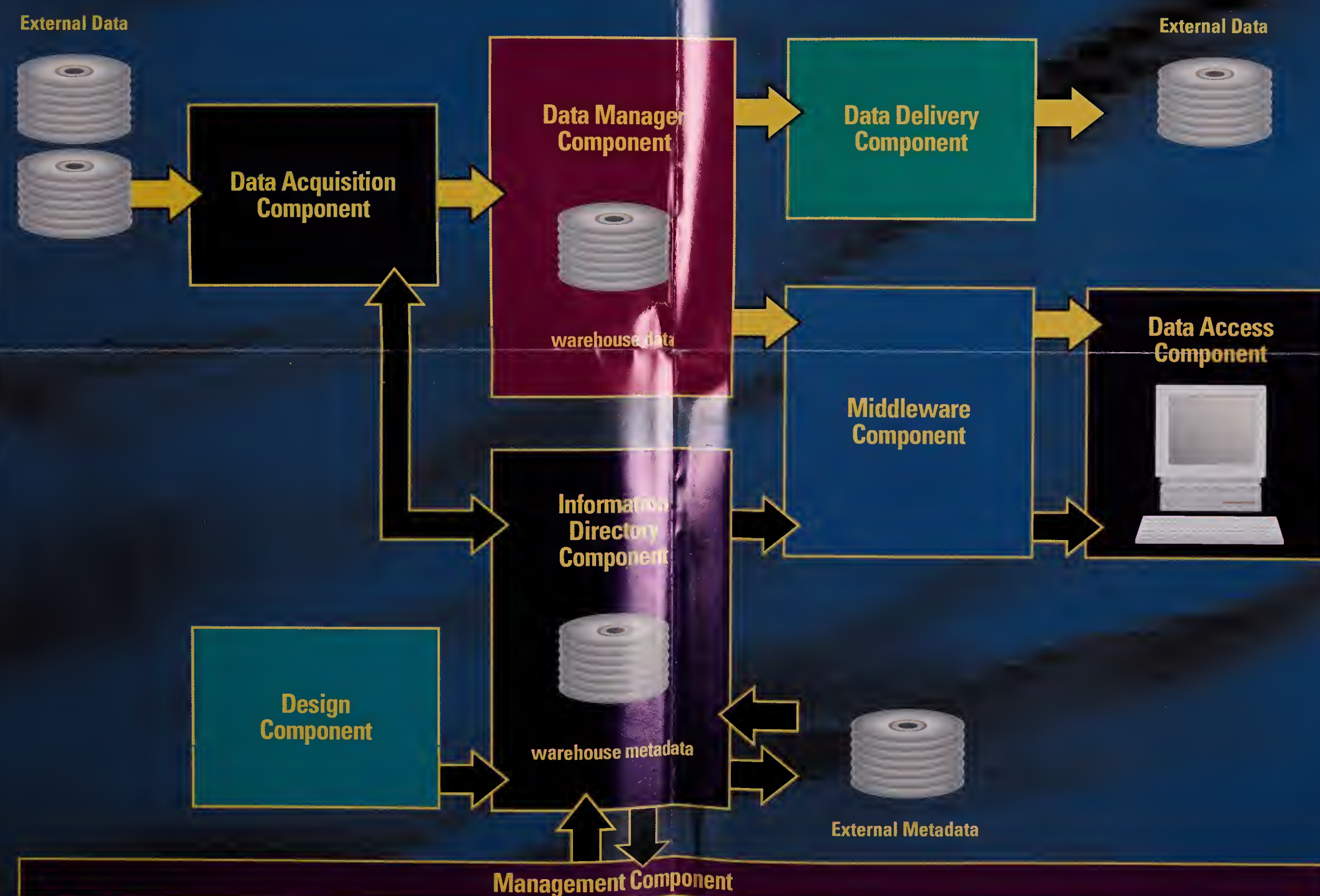
MAINTAIN BUSINESS METADATA

Business Information Directories

- Hewlett-Packard Intelligent Warehouse
- IBM DataGuide
- Platinum Data Shopper
- Prism Directory Manager

A DATA WAREHOUSING SYSTEM

TECHNICAL ARCHITECTURE



DATA DELIVERY COMPONENT

DEFINE DATA DELIVERIES AND
DISTRIBUTE DATA COLLECTIONS

Data Pumps

MIDDLEWARE COMPONENT

PROVIDE CONNECTIVITY TO WAREHOUSE DATA

Database Middleware

- CA-OpenIngres/Enterprise Access
 - IBM DataJoiner
 - Information Builders EDA middleware
 - Informix-Enterprise Gateway
 - Oracle Gateways
 - SAS System
 - Software AG Entire Net-Work
 - Sybase Enterprise Connect
 - TechGnosis (Intersolv) SequelLink
- Intelligent Data Warehousing Middleware
- Hewlett-Packard Intelligent Warehouse
 - Information Builders EDA Hub Server; Site Analyzer
- Relational OLAP Middleware Servers
- Information Advantage DecisionSuite 3.0
 - Informix-MetaCube
 - MicroStrategy DSS Server
 - Prodea Beacon
 - SAS System

DATA ACCESS COMPONENT

ACCESS AND ANALYZE DATA

Query, Reporting, and Analysis Tools

- Andyne GQL
 - Borland ReportSmith
 - Brio BrioQuery
 - Business Objects BusinessObjects
 - CA-Visual Express
 - Cognos Impromptu
 - Concentric Data Systems R&R Report Writer
 - Crystal Reports
 - Hewlett-Packard Information Access
 - IBM Visualizer Family
 - Information Builders FOCUS Six
 - Information Harvesting Information Harvester
 - IQ Software Intelligent Query
 - Intersolv DataDirect Explorer
 - Lotus Approach and 1-2-3
 - Microsoft Access, Excel and Query
 - MITI SQR Workbench
 - Open Data FindOut
 - Oracle Discoverer/2000
 - Platinum Forest and Trees, and ProReports
 - Powersoft (Sybase) InfoMaker
 - SAS System
 - Software AG Esperant
- MDBMS OLAP Clients
- Comshare Commander EIS/OLAP
 - Holistic Systems Holos
 - Kenan Technologies Acutrieve
 - Oracle Express Objects and Express Analyzer
 - Pilot (D&B) LightShip Professional
 - Planning Sciences Gentium
- Relational OLAP Clients
- Andyne PaBLO
 - Cognos PowerPlay
 - Information Advantage DecisionSuite 3.0
 - Informix-MetaCube
 - MicroStrategy DSS Agent
 - Prodea Beacon
 - SAS System
- DSS Application Development Tools
- Information Builders FOCUS
 - Lotus (IBM) Approach
 - Microsoft Access
 - Powersoft (Sybase) PowerBuilder
 - SAS System for Data Warehousing

MANAGEMENT COMPONENT

MANAGEMENT TASKS

These consist of: managing data acquisition operations; archiving and backing up data; securing and authorizing access to such data; and managing data access operations.

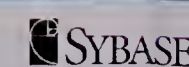
Vendor Warehouse Frameworks

- AT&T Enterprise Information Factory
- Hewlett-Packard OpenWarehouse
- IBM Information Warehouse
- Information Builders Incremental Warehouse
- Informix Universal Warehouse
- Oracle Warehouse
- Platinum Technology Data Warehouse
- Pyramid (SNI) Smart Warehouse
- Red Brick Universal Data Warehouse Blueprint
- SAS Data Warehouse
- Software AG Open Data Warehouse Program
- Sun Decision Warehouse
- Sybase Warehouse Works

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UCA&L
Welborn Clinic

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Ultra 1 keeps users revolving around Sun

By Craig Stedman

As Sun Microsystems, Inc. prepares to launch a line of 64-bit Unix servers this week, users report mostly smooth sailing with the company's workstation predecessor, the Ultra 1.

The UltraSPARC-based workstations, which shipped last November, have juiced up performance by two or more times over Sun's earlier machines, several customers said last week. Users who were begging for more speed said Sun is now competitive again, which has reduced their urgency to look to other vendors.

Solaris 2.5, the new operating system that accompanied the Ultra 1 hardware, has been easier to deal with than previous releases, though there is still a heavy flow of patches to fix bugs, users said. Also, some users said they are still waiting for third-party applications to be ported to Solaris 2.5.

The Ultra Enterprise servers being announced this week will also require the operating system and are expected to provide similar performance boosts.

Don Baune is one Sun customer who was leaning toward switch-

ing to Digital Equipment Corp.'s Alpha-based workstations before the Ultra 1 machines came along.

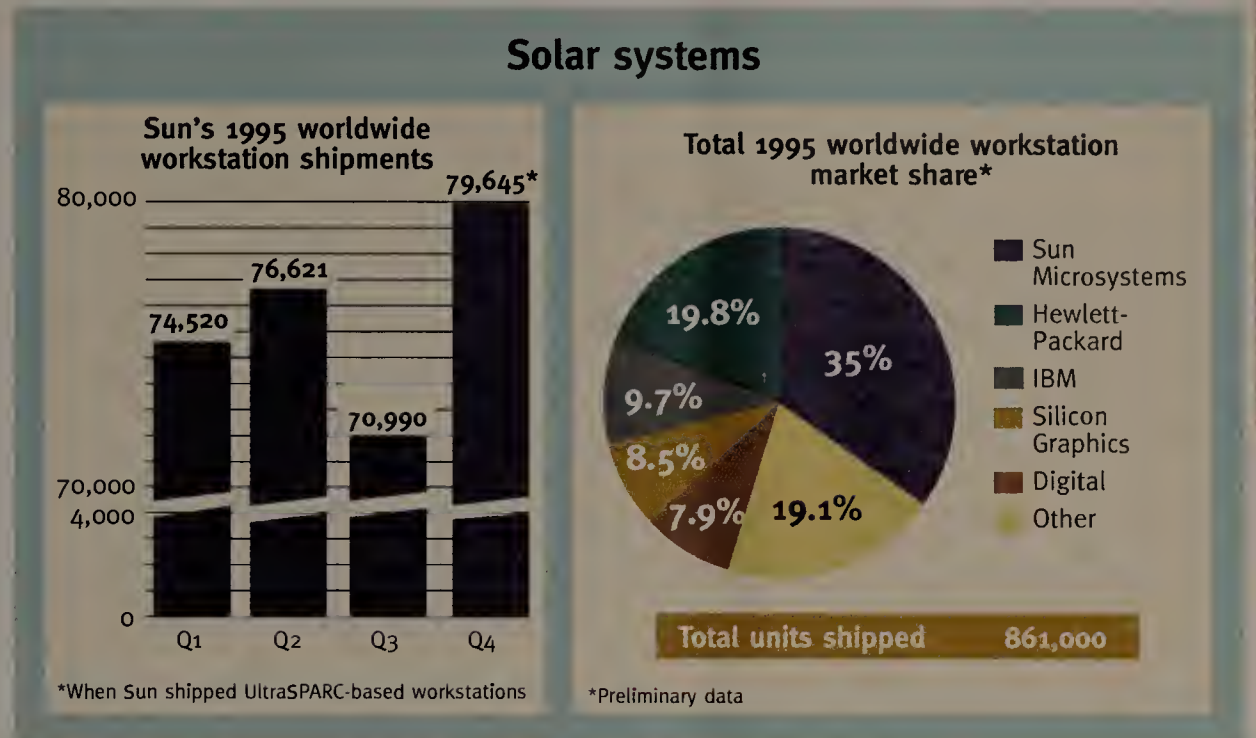
"We didn't want to move away from the single [vendor] environment that we have now, but Alpha's price/performance was so much better," said Baune, manager of computer operations at the University of Utah's Department of Radiology in Salt Lake City.

However, UltraSPARC runs the radiology department's medical imaging applications two to six times faster than earlier SPARCstations could, enough to keep the school in Sun's orbit, he said. Baune has installed six Ultra 1 boxes and said he expects to order two of the new servers this week.

Switching off

Eastman Kodak Co.'s office imaging group, which embeds Sun workstations in its high-end printers, had been mulling a switch "because Sun's performance just wasn't keeping up," said Rex Hays, a staff engineer at Kodak's Digital Technology Center in Rochester, N.Y.

Hays will still check out other platforms but said he thinks Sun



Source: Dataquest, Inc., San Jose, Calif.

is now in position to best its rivals, thanks in part to UltraSPARC.

On his own desktop, however, Hays still uses a SPARCstation 20 that runs the old SunOS operating system because the computer-aided design tools he uses haven't been fully ported to Solaris 2.5. "Until they get bumped up to Solaris, I'm kind of stuck with the SPARCstation," he said.

Others said Solaris 2.5, while more reliable than previous releases, is still producing a steady stream of patches. The number of fixes being thrust upon users "continues to spiral out of control," said Mike Rembis, systems and networking manager at Ericsson Business Services in Cypress, Calif., which is using the new operating system on limited num-

bers of pre-Ultra 1 boxes.

But several users were more philosophic.

"It is a pain to take a system down and install a patch, but nothing is perfect when it comes out the door," said David Pensak, a senior research fellow at Du Pont Co. in Wilmington, Del. "At least Sun is working as quickly as possible to fix things."

Microsoft PC may affect businesses

By Bob Francis

Microsoft Corp.'s Simply Interactive PC (SIPC), while clearly aimed at the home market, may change the way regular business PCs are built.

For instance, the PC's clunky internal expansion slots will be replaced by external expansion slots for items such as disk and CD-ROM drives. Also out: the current serial bus architecture. That will be replaced by the Universal Serial Bus (USB) for low-speed connections, such as printers, and the IEEE 1394 bus for

high-speed data transfers such as video.

Microsoft, in Redmond, Wash., is courting support from the disk drive industry to use 1394 as the next interface to replace SCSI. But representatives from the storage industry who were at Microsoft's Windows Hardware Engineering Conference seemed cool to this idea, preferring Ultra SCSI, the next generation of the current SCSI standard.

In any case, before the market gets SIPC, it will get PC97, according to Microsoft. PC97 is the base platform Microsoft

sees as necessary to run operating systems and applications planned for next year. In addition to 1394 connections and the USB, corporate users will see more power management in next year's PCs.

Better coordination

The power management features will be added to peripherals as well as to basic PCs. They should improve operating system and hardware coordination, according to Bill Veghte, a group manager for Windows PCs at Microsoft.

New Products

Vidar Systems Corp. has introduced TruScan Flash.

According to the Herndon, Va., company, TruScan Flash is the fastest large-document, black-and-white scanner available. It features a scan rate of 3 in./sec. and resolution of 400 dot/in. It includes automatic document staging, image centering, multiple thresholding options for clearer scans and thick document scanning.

TruScan Flash is bundled with scanner control software that lets users pan, rotate, paste, zoom, deskew and despeckle images.

TruScan Flash costs \$24,995.

► **Vidar Systems**
(703) 471-7070

Central Data Corp. has introduced PCI-4 and PCI-8, PCI serial port controllers.

According to the Champaign, Ill., company, the devices have full Peripheral Component Interconnect bus compatibility for Plug and Play installation and feature full modem control on all ports.

They were designed for connecting modems, terminals, printers and other RS-232 devices.

PCI-4 costs \$495, and PCI-8 costs \$695. Windows NT and RISC-based Unix operating system drivers are provided free with each unit.

► **Central Data**
(217) 359-8010

New Dimension Software Ltd. has announced Control-T 2.1.0, a removable media management system for IBM MVS-based data centers.

According to the Irvine, Calif., company, the product offers the Dynamic Dataset Stacking Facility, which stacks data sets on to a single tape as they are created. This was designed to help organizations optimize their media use.

Control-T 2.1.0 includes features for external tape management and robotic interfaces. It protects incoming tapes and allows for easy merging of tape libraries.

Pricing for Control-T 2.1.0 starts at \$30,000 for a base configuration.

► **New Dimension Software**
(714) 757-4300

Briefs

Backing up Exchange

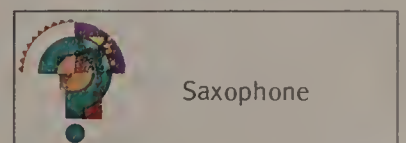
Seagate Software's Storage Management Group this month will ship a backup module and backup agent for use with **Microsoft Corp.'s** Exchange Server. With the new products, Exchange Server backups can run at the same time as regular

backups. The backup module, which sells for \$695 per server, was designed for use with Seagate Backup Exec for Windows NT. The backup agent costs \$995 per Exchange Server and works with Seagate Backup Director and Seagate Storage Manager.

New port in sight

IBM and Tandem Computers, Inc. announced a deal to

port Version 2 of IBM's MQ-Series messaging middleware to Tandem's NonStop Himalaya servers. MQSeries 1.5 already runs on the Tandem boxes, "but you can tell that it wasn't particularly designed with that environment in mind," said Steve Craggs, MQSeries business manager at IBM. The new port, due out in early 1997, is being produced by Amsys North America in Mendon, Mass.



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Post-it notes move
from desk to PC, 56

Software

Engine that could

Sybase stokes IQ engine with breakneck query speed

By Dan Richman

It sounds too good to be true: a database engine that speeds most queries 10, 40 or even 500 times faster than conventional relational database management systems.

But it seems true nonetheless. Sybase, Inc.'s IQ, which began shipping in February, is turning out results that have impressed users and analysts.

IQ doesn't do it all. It wasn't designed to compete with an RDBMS when used for on-line transaction processing, and users said it falters with some types of queries. But overall, for decision support, it is a breakthrough product.

"A very wide range of things that an RDBMS can do, IQ can do faster," said James McElhiney, a senior principal consultant at DbIntellect Technologies, a database application developer in Hull, Quebec.

"This is an enormously significant product for data warehousing," said Herb Edelstein, president of Euclid Associates, a consultancy in Potomac, Md.

Curt Monash, a New York consultant, said, "Sybase is out early with this technology and has pushed it further than its competitors. IQ is blindingly fast."

How it's done

IQ achieves its speed by storing data in columns rather than

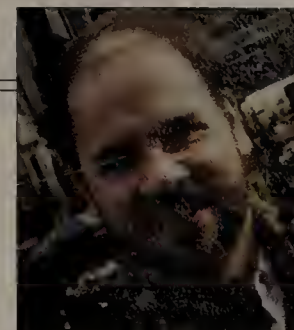
tables. It uses an indexing technology called bit-mapping, where data is represented by a single digit rather than by a word or phrase. Computers can add columns of digits far faster than they can scan columns of text.

But IQ has eliminated that limitation, users said. In addition to bit maps, IQ also uses B-tree indexes, which excel at finding specific records or ranges of records. The combination of indexes, plus an optimizer that picks the right scheme for the job, produces

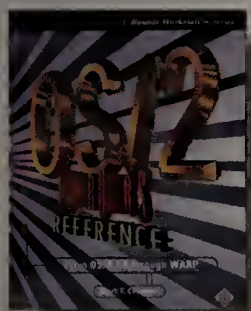
IQ's high performance.

"We figured anything other than what bit-mapped indexing usually does would be slow in IQ, but we were pleasantly surprised at the performance" of certain database routines, McElhiney said. DbIntellect tested data similar to what its end users use and achieved speeds an average of 44 times faster. Nineteen queries ran 500 times faster. At worst, queries ran at half the speed they had.

On the downside, IQ "wasn't Sybase, page 56



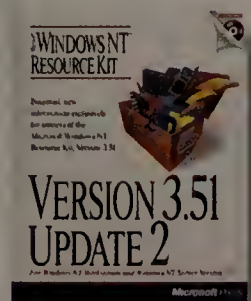
DbIntellect's James McElhiney: Many things 'an RDBMS can do, IQ can do faster'



OS/2 Power User's Reference: Easy to follow



Unix Made Easy: Great for novices



Microsoft Windows NT Resource Kit: The latest on NT features

Book bytes: operating systems

Unix

◆ *Unix Made Easy* (second edition), by John Muster & Associates; Osborne/McGraw-Hill, Berkeley, Calif.; 1,000 pages; \$34.95. This is a simple guide that even novice Unix users should be able to follow. It spells out, in English, how to log on to Unix, edit with vi, create and change Unix directories, and access help. More complex topics are covered as well, including electronic mail and manipulating data with awk.

◆ *Solaris 2.x: Internals and Architecture*, by John R. Graham; McGraw-Hill, Inc., New York; 222 pages; \$49 with disk. The book's title may be a bit misleading, because this reference work actually describes Solaris 5.x — which Sun has renamed 2.x. The book describes Solaris' major subsystems, including basic kernel operation and the implementation of virtual memory, paging and swapping. Three chapters are devoted to Sun's threads model. The 3½-in. disk con-

Book bytes, page 58

Win 95 apps are hot sellers

By Lisa Picarille

Just four months after the introduction of Windows 95, applications for the 32-bit operating system became the second best-selling type of PC software.

According to the Software Publishers Association (SPA), a trade group in Washington, Windows 95 applications garnered 12.4% of all North American software sales in 1995, despite being on the market for only part of the year.

Total software revenue for the U.S. and Canada for 1995 grew 12% to \$7.53 billion, compared with \$6.7 billion for 1994. Unit sales increased 60% in that time period.

Ups and downs

Meanwhile, software revenue for the fourth quarter of 1995 was \$2.07 billion, down 8.8% from the record \$2.27 billion posted in the fourth quarter of 1994. However, unit sales were up 35% over the year-earlier quarter.

The SPA attributed the downturn to a dramatic decline in the price of software and to a new mix of distribution arrangements, including software bundled with PCs, direct sales, corporate licenses and sales

into the retail channel.

"This probably reflects more cautious buying patterns from the channel," said Jeff Tarter, editor of "Softletter," a newsletter in Watertown, Mass. "Last year, dealers were really acting like pigs at a trough. They were putting everything they could out on the shelves, but they ended up selling relatively little."

Windows applications still led the pack. But while revenue for Windows applications rose 27.3% in 1995 to \$5.7 billion (and accounted for 75% of all software sold), sales of Windows software declined by 3.4% in the fourth quarter.

Sales of Macintosh software in 1995 fell 13.9% to \$1.05 billion, and sales of DOS applications plummeted

36.7% to \$717 million.

In the Windows market, including Windows 95 applications, the biggest percentage changes were in sales of personal information managers (PIM), languages and tools. PIM sales increased 50.1% to \$204 million, thanks to Windows 95, and languages and tools sales rose 61.5% to \$231.6 million. Sales in all categories of Windows software increased. Word processors and spreadsheets remain the bread and butter of the Windows environment.

On the Macintosh platform, the biggest increase was project management applications, up 19.7%. Languages and tools saw a 41.9% decline.

On other platforms

The only DOS software category that posted gains for 1995 was entertainment; it rose 58.2%.

The most dramatic drop in sales was an 84.6% decrease in presentation graphics sales, which accounted for only \$1.5 million in 1995 DOS revenue.

High rise

Last year's software sales in the European market increased 19% to reach almost \$2 billion, the Software Publishers Association reported.

1995 North American software sales

Platform	1995 Sales
DOS	\$717M
Macintosh	\$1.05B
Windows*	\$5.7B
Total	\$7.53B

* All versions and types
Source: Software Publishers Association, Washington

Software

New Products

CyberMedia, Inc. has introduced First Aid 95 Deluxe, a Windows fix-it kit.

According to the Santa Monica, Calif., company, First Aid 95 Deluxe intercepts crashes, gives warnings before trouble strikes and automatically fixes software configuration problems and conflicts.

The product will let users get the latest virus and software updates from the World Wide Web. To use this feature, a user clicks on an icon, which launches his Web browser, dials his modem and connects him to CyberMedia's Web server.

The software checks to see if the user needs the latest updates, downloads them, unpacks the file and installs the updates in the correct directories on the user's machine.

First Aid 95 Deluxe costs \$60.

► **CyberMedia**
(310) 581-4700

Xerox Corp. in Stamford, Conn., has unveiled optical character recognition (OCR) software that lets users scan paper documents on to World Wide Web pages.

TextBridge Pro 96 includes a Hypertext Markup Language (HTML) editor that allows users to quickly transfer information

from a paper document to HTML. That bypasses the need to manually reenter data for inclusion on Web pages.

TextBridge Pro 96 costs \$260.

► **Xerox**
(203) 968-3000.

Westbrook Technologies, Inc. has introduced File Magic Plus 4.2, document management software.

According to the Branford, Conn., company, File Magic Plus 4.2 lets users organize information so that it can be filed, found, retrieved, revised, annotated, forwarded, printed, mailed and refiled. Users can bring World Wide Web pages in to File Magic Plus 4.2 and replicate database structures.

File Magic Plus 4.2 includes Dynamic Data Exchange and OLE capabilities for communication with custom front ends with Windows applications.

Pricing for File Magic Plus 4.2 starts at \$2,000.

► **Westbrook Technologies**
(203) 399-7111

Alladin Systems, Inc. has introduced StuffIt Deluxe 4.0, a software compression package.

According to the Watsonville, Calif., company, this latest version has faster compression and expansion features, Internet support and improved electronic-mail support. It features a browser that lets users create, examine and modify archives without leaving the Finder application. Clicking an archive displays the contents in a new window. To stuff a file in an archive, users drag it on to an open archive window; to unstuff a file from an archive, users drag the file on to the desktop.

StuffIt Deluxe 4.0 includes DropStuff, which creates StuffIt self-extracting archives and can encode archives for distribution over the Internet.

StuffIt Deluxe 4.0 costs \$130.

► **Alladin Systems**
(408) 761-6200

Microstar Software Ltd. in Nepean, Ontario, has announced Near & Far Author, a graphical authoring add-on for Microsoft Corp.'s Word.

The product uses a graphical document model to act as a document structure guide. This lets writers create structured Standard Generalized Markup Language (SGML) documents within Word.

It also lets users import, export, format and print SGML documents.

Near & Far Author costs \$249.

► **Microstar Software**
(613) 596-2233

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Post-it notes move from desk to PC

By Stewart Deck

Untie that string on your finger. Call off the frantic search for scrap paper and pen. 3M has sent Post-it Software Notes to your rescue.

"I used to have the yellow paper Post-it notes stuck all around my computer screen, and the latest emergency just went on top of the others," said Clancy Potter, a financial analyst in Louisville, Ky. Using Post-it Software Notes, Potter is now able to type electronic notes to himself, group the notes on memo boards, create to-do lists, search through his notes and set reminder alarms — all



University of Alabama's Howard Valentine: *'For a reminder, you can't beat this little software'*

without using a drop of ink or a scrap of paper.

It all comes in a \$20 package. The Post-it Note dispenser is always in view on the desktop screen. To write a note, users click on the notepad, type a short message and place the note anywhere on the screen. Notes on a common topic can be pasted together on customizable electronic memo boards.

"There isn't any other product out there like this," said Abhijeet Rane, an analyst at IDC/Link in New York. "It's very user-friendly, always sitting on the desktop and keeping the notes on the screen until you choose to do some-

thing with them." Even if the PC is turned off, any notes left on the screen will reappear when it comes back on.

Daisy Wong, a doctoral student in computer science at the University of Alabama at Birmingham, uses the Post-it built-in timer and alarm functions to put together to-do lists and reminders. "I have Microsoft Office Pro that has a scheduler application, but I use Post-its instead. It's so easy and transparent and doesn't get in my way," Wong said.

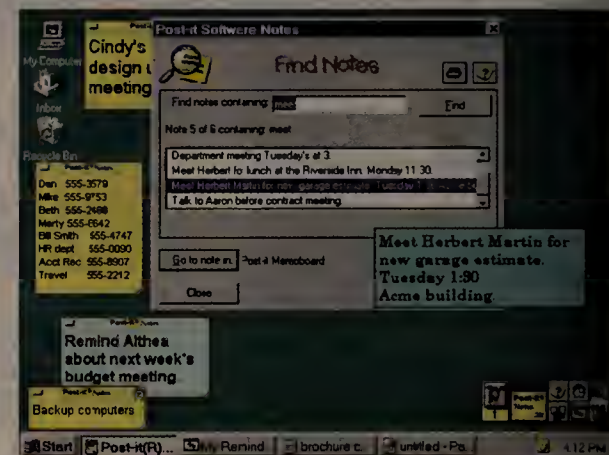
Howard Valentine, systems manager at the University of Alabama Health Services Foundation, has 200 Post-it notes stored on his desktop. He also uses the electronic Post-its instead of time-management tools. Valentine uses the alarm function, setting it to repeat on the same day every month to remind him of department meetings. "For a reminder,

you can't beat this little software."

Users can jot down a quick Post-it Note and send it to a colleague through any Messaging Application Programming Interface (MAPI)-compliant electronic-mail system, or forward an entire document with a note attached.

"Different people make little comments using different colored notes; it's evolved into a type of groupware for us," Wong said.

Melissa Tao, a software analyst at Lawson Software, Inc. in Minneapolis, grew tired of returning



With 3M's Post-it Note software, users type a message and place the note anywhere on the screen

from lunch and finding a sheaf of yellow sticky notes on her desk, so she decided to do away with the paper version entirely. Now when she leaves, she puts one paper Post-it on her keyboard.

It says, "To leave me a note: click on the icon, begin typing. Thanks."

Sybase tool speeds queries

CONTINUED FROM PAGE 53

so happy with three or more sub-selects" and choked when handling them, McElhiney said. But it will easily handle one or two, he added.

Other users report similar experiences.

"We had one complex decision-support query ... that we called 'The Stinker,'" said a database specialist at a financial services company in Cincinnati. "It took an hour to run on an RDBMS. With IQ, it took one minute. I don't see a reason why we shouldn't move our entire decision-support data-

base into IQ."

Scott F. Barnes, a senior manager at MCI Telecommunications Corp. in Atlanta, said IQ let MCI improve its telemarketing efforts by sifting through lists of prospective customers quickly. "It would have taken us three

days to do what IQ does in five minutes, so we simply didn't bother," he said.

Edelstein said the only other DBMS on the market that is suited especially for data warehousing is Red Brick Warehouse from Red Brick Systems, Inc. in Los Gatos, Calif.

Databases

On the horizon

Sybase's IQ query-speeding tool uses a replica of warehoused data that is copied into it periodically. The tool is expected to work mainly with databases from 1G byte to 60G bytes in size, but it could work with terabytes of information, Sybase said. IQ runs only under Sun Microsystems, Inc.'s Solaris, but it is promised for Hewlett-Packard Co.'s HP-UX, Digital Equipment Corp.'s Unix and IBM's AIX by Aug. 1. It will be available for Microsoft Corp.'s Windows NT and Silicon Graphics, Inc.'s Irix by Dec. 31. IQ sells for \$32,440 for a single-processor machine that supports 32 users.

SoftWindows bridges Macintosh, Win 95

By Lisa Picarille

Users can now run Windows 95 applications on their Power Macintoshes.

SoftWindows 95 for Power Macintosh, from Santa Clara, Calif.-based Insignia Solutions, Inc., is the first software to give customers the best of both worlds. SoftWindows 95 is the follow-up to SoftWindows 2.0, which lets users of Apple Computer, Inc.'s Macintosh run Microsoft Corp.'s Windows 3.x applications.

E-mail enabler

"You couldn't pry the Macs out of our hands," said Gary Hutcheson, supervisor of design services at the Plainfield, Ind., branch of Cincergy Corp. The Cincinnati-based electric and gas utility has about 25 Macintoshes and several thousand PCs running Windows 95.

"We can now exchange E-mail with the rest of the company using the Windows version of Microsoft Exchange running on the Mac," Hutcheson said. "We can open files created with Windows applications. And the networking support is really good, so we can have Macs talking to NT servers using SoftWindows 95."

SoftWindows 95 lets users access Macintosh and PC SCSI devices and offers enhanced printer, networking and sound support. The program bundles Insignia's

TurboStart for quickly starting the Windows 95 operating system on the Macintosh. It also supports major networking protocols including TCP/IP, Novell, Inc.'s NetWare, IBM's LAN Manager, Banyan Systems, Inc.'s Vines and Digital Equipment Corp.'s Pathworks. SoftWindows 95 works with all Windows 95 software and is available for an estimated street price of \$349 to \$379.

One user said the program runs Windows 95 applications on the Macintosh at speeds comparable to a 66-MHz 486-based machine running Windows 95.

Insignia is also shipping Ntrigue for WinFrame, which allows PC users to run Windows applications remotely over the Internet or an intranet. It is available for \$1,000 for a five-user license.

Fair share?

A class-action suit was recently filed against Insignia Solutions charging that the company made false or misleading statements about its business, software and earnings growth to help it complete a recent initial public offering. At press time, Insignia officials said they hadn't yet been served with any legal papers in this matter. In the company's IPO on Nov. 14, the share price was \$12; the stock closed on Monday, April 8, at \$6.

Briefs

SAP, Microsoft to create Internet link

SAP AG is partnering with Microsoft Corp. to develop interfaces for funneling Internet-based business transactions directly into R/3 client/server systems. SAP will layer its R/3 applications on top of Microsoft's Internet infrastructure. Under this scenario, a customer using Microsoft's Explorer browser software could order from a World Wide Web-based catalog linked to an R/3 system at the back end. SAP executives

emphasized that Microsoft is one of several partners it is working with to bring Internet capabilities to R/3. Products are scheduled for delivery by the end of this year.

PeopleSoft goes vertical

Add PeopleSoft, Inc. to the ever-growing list of client/server software vendors that are targeting their applications to specific vertical industries. The Pleasanton, Calif., company announced a dedicated sales and marketing organization to zero in on the financial services market. The unit is headed by Steve Tennant, director of financial services product strategy.

DCE upgrade released

The Open Group in Cambridge, Mass., belatedly released the first half of a Distributed Computing Environment (DCE) upgrade to system vendors. DCE 1.2.1, which was targeted for release last fall, adds a Network File System gateway, C++ support and file sharing with NetWare clients. A follow-on DCE 1.2.2 release, due in the fourth quarter, will have support for public key encryption and a single-threaded version of DCE's remote procedure call technology. The Open Group is a consortium formed by the merger of X/Open Co. and the Open Software Foundation.

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Book bytes: operating systems

CONTINUED FROM PAGE 53

tains a collection of script examples and make files.

♦ **Unix System V Release 4: An Introduction (revised)**, by Kenneth H. Rosen, et al; **Osborne/McGraw-Hill, Berkeley, Calif.**; 1,250 pages; \$39.95. This illustrated tome, written by four insiders at AT&T Bell Laboratories, covers just about every Unix-related topic imaginable. Chapters include the shell; editing and formatting text; different flavors of Unix including Linux and HP-UX; Unix tools including awk and perl; the X Window System; system administration; and exploring the Internet. Not for pure beginners, though.

OS/2

♦ **OS/2 Power User's Reference (from OS/2 2.0 through Warp)**, by Mark T. Chapman; **McGraw-Hill, Inc., New York**; 476 pages; \$44.95 with CD-ROM. This is an easy-to-follow book for OS/2 users, from novices who need the basics explained (the differences between OS/2 for Windows and OS/2 "full-pack") to experts who'll appreciate tips on multimedia device drivers, PCMCIA support and the OS/2 BonusPak. Appendices list OS/2 information sources from trade pubs to bulletin boards and user groups. The CD-ROM includes device drivers, compatibility tables, fonts, games, sounds and utilities.

Windows NT

♦ **Windows NT 3.5 Guidelines for Security,**

Audit and Control, Microsoft Press, Redmond, Wash.; 286 pages; \$49.95. This book grew out of a 10-person research team from Citibank, Coopers & Lybrand and Microsoft. It spends some time talking about general security issues — the corporate security structure, management vs. user roles, different types of audits and so on. Then it delves into specifics about NT security features and how to audit NT. Appendices list security-related commands, default directory permissions and data structures; one

provides a suggested baseline security and audit matrix.

♦ **Microsoft Windows NT Resource Kit (updated for NT Version 3.51)**; Microsoft Press, Redmond, Wash.; 330 pages; \$39.95 with CD-ROM. This is meant for programmers, project managers and support staffers who need to know the latest about NT's latest features. The CD-ROM includes utilities, updates of tools and accessories from the previous version of NT and support for the PowerPC. The book describes NT's features and then how to roll out the operating system, including planning and doing a pilot.

Windows 95

♦ **Free Stuff for Windows 95**, by Patrick Vincent; **The Coriolis Group, Scottsdale, Ariz.**; 525 pages; \$24.99 with CD-ROM. This is a book that's both fun and useful. It's packed with tips for getting free stuff from the 'net and the Web — everything from screen shots of TV's *Friends* stars to how to download McAfee's \$65 virus scanner for noth-

ing. There's a hardware-compatibility list for what Win 95 supports natively (pre-ServicePak), and a list of worldwide Internet service providers. The CD-ROM has lots of neat stuff on it as well, including applications and utilities.

♦ **Programming the Windows 95 User Interface**, by Nancy Winnick Cluts; **Microsoft Press, Redmond, Wash.**; 408 pages; \$34.95 with CD-ROM. For developers who want or need to write applications that play well

with Win 95. The book goes through all the new features incorporated into the Win 95 user interface and then talks about how to deal with each of them — adding tool bars, status bars and dialog boxes; supporting long file names; and creating file viewers. Especially valuable for the corporate developer is how to port code from C to the Microsoft Foundation Class Library and vice versa. The CD-ROM includes sample source code for all of the above.

—Johanna Ambrosio

Briefs

DEC bundles BackOffice with servers

Digital Equipment Corp. announced it is bundling Microsoft Corp.'s BackOffice server software with some models of its Prioris PC servers. The Prioris BackOffice bundle is available in Digital's Prioris HX5166 and ZX5133MP/2 symmetrical multiprocessor servers.

Document standard debuts

The **Document Management Alliance (DMA)** put its first document management standard into action at the recent AIIM '96 Show in Chicago. The middleware standard lets users search and retrieve documents, regardless of file for-

mat, across multiple vendors' document management systems and repositories no matter which client package they use. The DMA, made up of 93 vendor and corporate user companies, is run by the Association for Information and Image Management (AIIM) in Silver Spring, Md.

May Day for Raima

Raima Corp. in Issaquah, Wash., announced a May 1 release date for its Report Writer and Report Analyst applications. Both products run under Windows 3.1, Windows 95 and NT against Raima's database manager and its Velocis database server. Report Writer starts at \$495; Report Analyst starts at \$795.

New Products

Datawatch Corp. has introduced Q-Support 4.0, help desk automation and asset management software.

According to the Wilmington, Mass., company, Q-Support runs under Microsoft Corp.'s Windows and Windows 95. It logs, routes and tracks help desk calls, provides inventory control, monitors performance levels and accesses third-party knowledge tools.

The latest version uses electronic mail or pagers to alert the support center to outstanding calls that may be in danger of unsatisfactory resolution. It also notifies users if a call is related to one previously logged in its database. Users can review related calls or cancel a call to avoid duplication.

Pricing for Q-Support 4.0 starts at \$6,500 for a three-user license.

► **Datawatch**
(508) 988-9700

Smart Storage, Inc. has announced SmartCD Archive for Microsoft Corp. Windows NT environments.

According to the Andover, Mass., company, SmartCD Archive runs on any Windows NT Server and provides transparent access to data stored on CDs. It was designed to provide CD drive, tower and jukebox support with multitiered caching.

With SmartCD Archive, all CDs in the system can be viewed through one source.

The software works with all standard applications. Pricing starts at \$600 and is based on specific devices in the CD storage structure.

► **Smart Storage**
(508) 623-3300

Virtual Reality Laboratories, Inc. in San Luis Obispo, Calif., has unveiled FormWizard.

The software runs on Microsoft Corp. Windows 3.1, Windows 95 and Windows NT and lets users scan, fax or import any paper or electronic form into their PC. They can then fill out the form and print or fax the results. Information can be pulled into the form from any database using SQL.

FormWizard requires an Intel Corp. i486-based system with 8M bytes of RAM. It costs \$60.

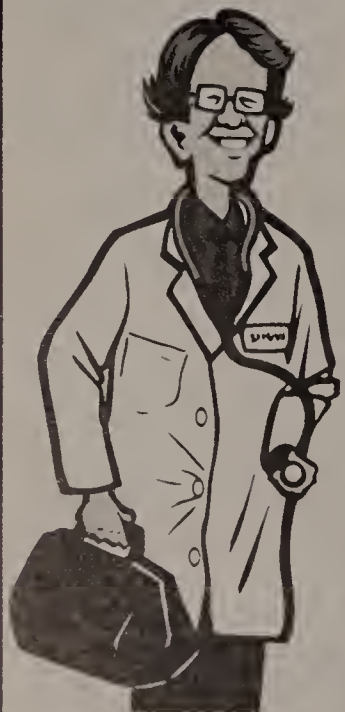
► **Virtual Reality Laboratories**
(805) 545-8515

Product short

Norman Data Defense Systems, Inc. in Fairfax, Va., announced BlockIt and BIAS, desktop and workgroup security software. BlockIt is an entry-level access control product that protects systems from direct attack. BIAS is a centralized system administration tool that augments BlockIt. They feature encryption, file permissions control, password lock and a single network logon. Pricing for BlockIt starts at \$150; BIAS starts at \$275. Norman Data Defense Systems, (703) 573-8802.

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Powersoft serves middle ground with Optima++

By Howard Millman

To overcome C++'s reputed complexity, Powersoft Corp.'s forthcoming tool set, Optima++, unites C++ code with an object component-generating system and a drag-and-drop visual environment.

Powersoft positions the product to serve the middle ground between traditional third-generation language C++ development suites and fourth-generation language tool sets such as Microsoft Corp.'s Visual Basic, Borland International, Inc.'s Delphi and Powersoft's PowerBuilder. Optima++ automates code generation and essentially eliminates all user-interface and project setup coding.

But when you make the transition from a traditional C++ tool to an integrated development environment, you risk forgoing control for convenience.

To create our application, we followed a simple three-part process. We designed a user interface, specified properties and added code that dictated how the application should respond.

Defining classes

To define classes in our project, we clicked on a name in the Reference Card window, dropped the objects on to the user interface form and let the program generate the code. Optima++'s Reference Card, a cleverly disguised interactive help system, uses Windows 95's hierarchical tree display to list the actions you can perform on user interface objects. Optima++'s Parameter

version, you can add — but not create — classes for OLE controls to the palette.

Other features worthy of high marks include Optima++'s slick debugger. It provides runtime windows that display registers, threads and even memory segments.

During our tests, we noticed that our late beta version was slow. Powersoft promises to correct the performance problem before the scheduled mid-May release date. Because the software uses Watcom C++'s fast compiler, we expect the overall performance of the shipping version to be quick.

Optima++'s finished applications can be deployed as stand-alone .EXE programs or

Powersoft's Optima++, C++'s new look

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as compact .EXE programs with runtime Dynamic Link Libraries. Executables run on Microsoft's Windows 95, Windows NT and — with optional Win32 support — Windows 3.1. Powersoft assesses no runtime charges.

I advise monitoring Optima++'s memory swap file during the build because it can grow to 20M bytes. Developer stations should be equipped with at least 16M bytes of RAM.

Powersoft's Professional and Enterprise editions, which are due for third-quarter release, will include a Java development capability, support for Microsoft ActiveX controls and browser plug-in tools.

Powersoft promises to provide printed and on-line documentation. The beta manual contained well-focused chapters designed for novice programmers, experienced C programmers — but new to C++ — and C developers who are programming for Windows 95 or NT.

Millman, based in Croton, N.Y., operates the Data System Services Group, a networking and problem-solving consultancy. He can be reached at hmillman@mcimail.com.

IBM's VisualAge for C++ offers cross-platform support

By Steve Petrucci

IBM's VisualAge for C++ for Windows is a late entry in the field of Windows development tools and shows the rough interface edges typical of first-generation tools. But this ambitious first effort supports serious cross-platform work, and the problems should be fixed over time.

At first glance, I wondered if we needed another C or C++ compiler for Windows, but VisualAge is different enough to justify its presence. Don't be tempted to compare it with Microsoft Corp.'s Visual C++ or other Windows development tools. VisualAge is a more complete development tool.

VisualAge's Program Smarts component can be used by developers who are starting from scratch or those who want wizard-like shortcuts. There is also a rapid application development (RAD) tool called the Visual Application Builder.

The tool also provides Open Class, a more complete class library than Microsoft Foundation Classes (MFC). Open Class enables a wide range of target platforms — not just the Windows variants — but it doesn't support MFC.

VisualAge offers native support for a wide range of databases, including IBM's DB2, Sybase's SQL Server and Oracle's product, as well as support for Open Database Connectivity. Compound documents also are supported in the form of OLE and OpenDoc, which is unusual. And enterprise-wide development is supported via IBM's SOM and DSOM and the Object Management Group's Common Object Request Broker Architecture, which is also unusual.

The price of doing all these things is a lack of polish. The challenge IBM faces isn't that different from what Microsoft ran into with Visual C++: the need for many product cycles to perfect its environment.

Start me up

Here's some advice for starting up VisualAge: Get another hard disk. A typical installation requires 370M bytes of disk space. Also, the flickering background of the installation process annoyed me. The custo-

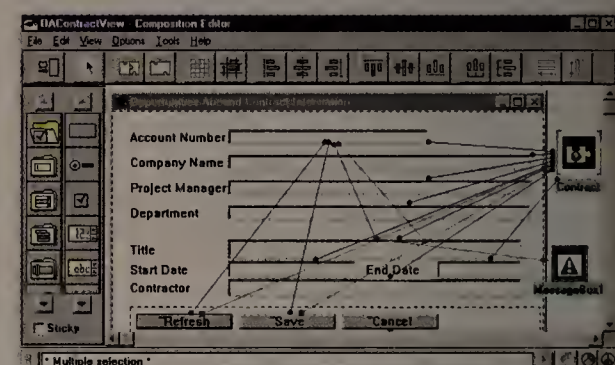
mizable editor that comes with VisualAge has more editor emulations than I have ever seen before.

The VisualAge project window, WorkFrame, was consistent with other Windows development tools, but there was too much white space. And there is an inconsistent use of tool tips and right clicks and far too much use of the Windows system font.

But these are minor quibbles. The Visual Application Builder, a front end to the IBM Open Class Library, is a powerful development tool that lets you visually and rapidly create applications. I don't think most Windows programmers will need it, but it has a purpose in corporate and IS development sites where products need to be created quickly and run on many platforms.

There are various wizard-like Build Smarts for creating 13 types of projects, for example, Visual Builder, Data Access and Compound Document Framework.

I created a container OLE application



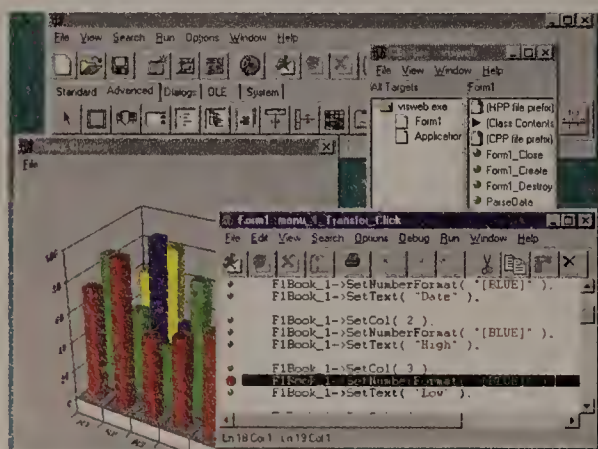
Visual Age C++ for Windows' Visual Builder enables RAD by letting users assemble prefabricated parts from IBM's Open Class Library

with the Compound Document Framework. This was quite easy, but I discovered that the VisualAge build process is a bit slow — the compile and link speeds are no match for the blazingly fast Symantec C++ product. Those familiar with the code needed to produce an empty OLE container application in MFC will be shocked to see only two small C++ source files in the Open Class project.

The resulting code for creating a complete OLE container application was much smaller than that created by MFC. I was quickly able to open multiple documents and include various OLE objects such as sound, bitmaps and Microsoft Word documents and save them to disk.

VisualAge allows multifaceted development. It supports many middle- and high-end platforms including Microsoft's Windows 95, Windows NT, Windows 3.1 using Win32s; IBM's OS/2, AIX, MVS and OS/400; and Sun's Solaris. And count on future support for Hewlett-Packard's HP-UX and Apple's Power Macintosh.

Petrucci is president of Intellware in Bellevue, Wash., which develops multimedia PC- and Web-based applications. He is the author of the book *Cross-Platform Power Tools*.



Optima++'s ability to integrate OLE controls allows developers to manage native and embedded objects using drag-and-drop editing

Wizard next prompted us for the required values, composed the corresponding C++ code fragment and pasted it into our application. Easy.

If you want greater control, you can override the automatic generation feature, click on the editor and directly enter the required C++ code to connect a component to a form.

You can also drag prebuilt visual components into place or use OLE components from third-party vendors. In the Developer



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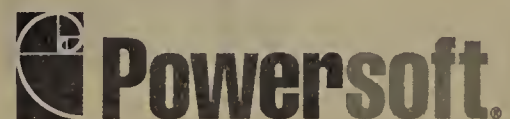
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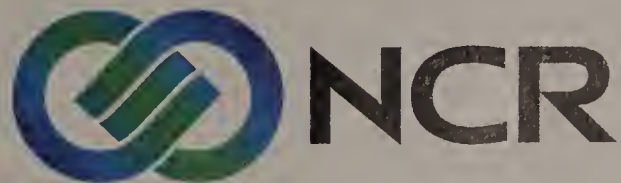
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Motorola upgrades
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The Enterprise Network

Wizards to aid NT

Help utilities point the way for common network tasks

By Laura DiDio

The next release of Microsoft Corp.'s Windows NT Server will include help utilities that will let technically unsavvy network administrators painlessly install networks.

The eight Wizard utilities will be included as part of the base Windows NT Server 4.0 network operating system when it ships this summer, said Mike Nash, Microsoft's group product manager.

The Wizards are in dialog boxes. Network administrators simply click on a set of plain English prompts and are guided through the most frequently used processes such as adding users to the network and installing and configuring printers and modems, Nash said.

Users and analysts familiar with the Wizards said they could make Windows NT Server the easiest network operating system to configure and use.

"Microsoft's entire thrust is to make Windows NT Server a

mass market [network operating system] that's a no-brainer to set up and install for even the most technically challenged administrator," said Jim Greene, an analyst at Summit Strategies, Inc., a consultancy in Boston.

Greene added that while the first version of the NT Server Wizards in 4.0 won't be "a total panacea," the Wizards will go a long way toward more fully automating routine network tasks and speeding up the installation process —

especially in large organizations with multiple file servers.

Network operating systems

Easy install

"The Wizards are another brick in the wall to help Microsoft achieve its long-term aim of building a [network operating system] that doesn't require extensive setup — it's the anti-Unix," Greene said.

Users such as Gary Campbell, a senior staff engineer at Perkin-Elmer Corp., a manufacturer of scientific analytical equipment in Wilton, Conn., said the Wizard utilities would be a welcome time-saver for

many businesses and could take the mystery out of network operating system installation.

"NetWare is our main [operating system] right now, and it has all the mystique of the glass-house mainframe," Campbell said. "With the Wizards, anyone can be an instant network administrator, with the ability to add new users, devices and applications to servers and workstations. You won't have to call in the [Certified NetWare Engineer] cavalry. That's a very big deal."

Perkin-Elmer doesn't plan to abandon its commitment to Novell, Inc.'s NetWare as its chief network operating system, Campbell said.

But he said the addition of Wizard utilities could tip the scales in Microsoft's favor for users who don't have a big investment in Novell and are trying to decide between NetWare and Windows NT Server.

Joseph Murphy, assistant vice president of field operations at Commercial Union Insurance Cos. in Boston, agreed. He said he is familiar with the end-user-oriented Wizard help

World of wizards

Windows NT 4.0, due out this summer, will have the following set of help tools, called wizards. They were designed to make it easy for administrators to set up and configure Windows NT Server networks.

User Wizard: Creates and adds new users to the network. It runs on all BackOffice applications.

Group Wizard: Manages groups of users.

Security Wizard: Allows administrators to set up and monitor security on a directory or file.

Printer Share Wizard: Allows network printers to be easily set up and attached to Windows NT file servers.

Program Wizard: Lets administrators automatically install and delete applications.

Modem Wizard: Automatically installs and configures modems.

Client Software Installation Wizard: Makes it simple for administrators to install software on client workstations.

License Wizard: Helps track the number of licenses being used on the network and ensures software licensing compliance.

utilities that Microsoft has already incorporated into Windows 95.

"I'm pleased that Microsoft is extending the Wizards to include more advanced functions in the NT Server [network operating system]. They can potentially avert a lot of administrative headaches," Murphy said. "When network operating system setups don't go well, it's

very costly in terms of lost productivity for end users, not to mention the time and expense of sending administrators to remote locations."

NT Server 4.0 is slated for beta testing this month. Besides the Wizards, Windows NT Server 4.0 also will include the long-awaited Windows 95 user interface and improved Internet access.

IBM wants to drive management standards

By Patrick Dryden

IBM's road map for combining its management software with that of its new acquisition, Tivoli Systems, Inc., follows a standards path that has tripped up others. But if the two can garner industry support, interoperability among the various types of management tools could result.

Earlier this month, Tivoli and its new owner unveiled a strategy for merging IBM's SystemView with Tivoli's Tivoli Management Environment (TME). The strategy promises extensive support through standards, not individual

partnerships. The goal is to extend third-party support for TME 10, the blend of SystemView and Tivoli's products that will ship next month — further and faster than is normally the case in the management software market.

Traditionally, platform vendors have garnered support for their environments one tool at a time, partnering with key tool vendors according to user demand. Before IBM bought it in

January, Tivoli followed this method, using partnerships to develop specific modules for TME

to help users manage vital network devices, servers, applications and functions such as security or a help desk.

Analysts said the IBM/Tivoli strategy could change the management industry, by letting users mix and match their

favorite platforms and tools. Users could choose any trouble-ticketing tool, for example, and would

know it would work with their network monitoring and alerting platform.

The plan has three phases: Define management interfaces within a small group of vendors, formalize a specification that isn't unique to the TME 10 platform and publish all specifications so anyone can implement them.

"This sounds like a good approach, to provide interfaces for all vendors to work with them," said Mitch Hull, director of software development and support at Florida Power Corp. in St. Petersburg. "Following through with this commitment would show that

IBM has changed its outlook on the world."

IBM focused on linking its own tools and platforms through the broad SystemView effort and never succeeded in attracting partners that users wanted, said Tim Wilson, a management analyst at Decisys, Inc., a network consultancy in Sterling, Va.

"This could change the whole platform battle" in which users must try to integrate preferred tools through one network or systems management platform, Wilson said. "IBM is setting its sights higher this time, acknowledging

IBM, page 70

Details, details

For complete details about the road map for TME 10, see the company's World Wide Web site at www.tivoli.com.

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Motorola seeks market for upgraded Envoy

By Mindy Blodgett

Motorola, Inc. has updated its Envoy Wireless Communicator with improvements the company said significantly add to the device's connectivity capabilities and other functions.

But some industry observers asked if there is a real market for the device.

Motorola's Envoy 150 Wireless Communicator gives users access to Microsoft Corp.'s Mail and Lotus Development Corp.'s CC:Mail through software from the River

Run Software Group in Greenwich, Conn., and IntelliLink Corp. in Nashua, N.H. It also uses holographic technology to create the impression of a backlit screen, which is easier to read.

The 1.7-pound handheld device also features General Magic, Inc.'s Magic Cap 1.5 operating system, which has faster start-up times and better performance and memory management. Current Envoy users can upgrade for \$29.

"It remains to be seen whether people have a real need for the Envoy," said Phillip Redman, an analyst at The Yankee Group in Boston.

Motorola won't release any market numbers, but Redman estimated the company has sold only 25,000 Envoy's since their release last year.

Despite the changes to Envoy, it was what Motorola didn't do that concerned one user. Cliff Hurst, president of Career Impact, Inc. in Wells, Maine, said it costs too much for the ARDIS wireless messaging service Envoy uses. Motorola owns ARDIS Co.

Hurst said ARDIS costs him about \$50 to \$60 per month.

Some features of Motorola's Envoy 150 Wireless Communicator include:

Access to Microsoft Mail and Lotus CC:Mail E-mail systems

Ability to update desktop electronic calendars

RadioMail two-way wireless messaging service



IBM management standards

CONTINUED FROM PAGE 67

that users have multiple platforms and applications."

A working group already has defined an application management specification. This vendor-neutral interface will be adopted by Compuware Corp. for its systems management tools and those from half a dozen vendors beyond IBM and Tivoli, IBM said.

Tivoli and SunSoft, Inc. last month launched a working group to define an interface for manag-

ing Internet access.

More direct network and systems management competitors, however, might not sit down with IBM/Tivoli to define common interfaces or follow through to make products work together, Wilson said.

But, according to Tivoli officials, talks are under way with Hewlett-Packard Co., whose OpenView framework leads the network management market.

Mass-management objective

IBM/Tivoli wants to ease integration of other vendors' tools with its TME 10 management platform by defining interfaces that anyone — even competitors — can adopt. Nine management working groups are under way or emerging:

Applications management

Specification for management-ready applications already released in October 1995; implemented by Tivoli for SAP AG's R/3 module, supported by IBM and Compuware.

Database management

Group includes DBMX Ltd., Informix Corp., Oracle Corp., Sybase, Inc. and IBM's DB2, but it hasn't yet proposed a specification.

Internet management

Group formed last month with SunSoft, Inc. to define a standard way to configure, monitor and control Internet access. Supported by Bay Networks, Inc., Cisco Systems, Inc., Netscape Communications Corp. and Spyglass, Inc.

Network management

Group will form from IBM's NetView Association with Digital Equipment Corp. to define interfaces linking network and systems management platforms and tools.

Help desk

Group to be formed to specify an interface between event-driven management systems and help-desk-oriented workflow systems.

Scheduling

Group to be formed to define interfaces between different job schedulers.

Security

Group to be formed to link tools for user access management, security audits and analysis.

Performance

Group to be formed to enable diverse management applications to collect performance statistics.

Storage management

Group to be formed to define interfaces between backup, archive and hierarchical storage management subsystems.

Briefs

Exchange searching

Fulcrum Technologies, Inc. in Ottawa has introduced Fulcrum Find for Exchange, a search engine add-on for Microsoft Corp.'s Exchange messaging and groupware software. Fulcrum Find for Exchange is accessed from the Exchange tool bar and managed from within Exchange itself. Fulcrum Find costs \$1,495 for the server and \$39 per client.

Cyber cipher

CipherLink Ltd. at Network/Interop '96 introduced an encryption software package that secures data traffic on Windows, Macintosh and Unix networks. Would-be eavesdroppers who attempt to hack into networks safeguarded with CipherLink will see nothing more than scrambled, unreadable text. CipherLink is available now and costs \$99 per workstation client.

NCR backs Exchange

NCR Corp. recently said its enterprise management software

suite will support Microsoft's Exchange. The support will extend to products such as NCR's LifeKeeper middleware, NetVault networked tape management software and the Server Availability manager for remote management.

Motorola pages developers

Motorola, Inc.'s Personal Communicator Systems and Software Division has announced a software kit aimed at coaxing developers to devise paging-capable products. The Flexstack Software Developer's Kit was designed to allow integration of paging capabilities into computers and remotely controlled devices. Pricing was not available.

DEC message upgrade

Digital Equipment Corp. has introduced a new version of its DECmessageQ software, a rival offering to IBM's MQSeries messaging middleware. Version 3.2 of DECmessageQ will include software that bridges to MQSeries, plus new client support for IBM mainframes.

More network monitoring

Enhancements are on the way to help users of two popular network performance monitors. **Concord Communications, Inc.** in Marlboro, Mass., plans within the next six weeks to integrate its Network Health tools with the Spectrum network management platform from Cabletron Systems, Inc., offer a World Wide Web interface for remote operation and add modules supporting specific telecommunications functions needed by carriers. **Frontier Software Development, Inc.** in Chelmsford, Mass., this summer plans to offer playback capability to NetScout Manager. Adding a SQL database to the tool will let users apply different filters and analysis tools to collected performance data.

SHORT TAKE **Boole & Babbage, Inc.**'s storage division and **St. Bernard Software** in San Diego announced plans to provide LAN-to-mainframe backup of Novell, Inc.'s NetWare and Microsoft's Windows NT system files.

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New Products

BGS Systems, Inc. has introduced Best/1-Visualizer for Windows NT, a performance measurement/analysis system.

According to the Waltham, Mass., company, the product gathers and analyzes data for networked Windows NT servers, workstations, applications and networks. It fo-

cuses on applications and workloads for a top-down view of networked NT client/server performance.

Best/1-Visualizer for Windows NT continuously identifies impending bottlenecks, poor response times and utilization issues. It was designed to determine whether server performance can be improved, whether upgrades and add-ons are justified, whether software has changed network performance and how processors have improved

client/server response time.

Pricing starts at \$4,750.

► **BGS Systems**
(617) 891-0000

Rad Network Devices, Inc. has announced OG-C2, a two-slot modular router chassis.

According to the Costa Mesa, Calif., company, OG-C2 can use any combination of Rad Network's OpenGate communica-

tions modules for Ethernet, Token Ring Fiber Distributed Data Interface or wide-area networks. It can be used with router access nodes at remote sites to connect up to eight remote offices.

Pricing for an eight-port WAN configuration starts at \$9,900.

► **Rad Network Devices**
(714) 436-9700

ImageNet Ltd. has introduced Cane, a Windows NT-based tool for network designers, systems integrators and network managers.

Cane is a graphic, object-oriented, interactive network engineering tool for designing, installing and maintaining networks. According to the Wellesley, Mass., company, it lets designers build a model of the network to evaluate the validity of network design and simulate its performance. It supports the entire network life cycle, from definition of end-user requirements to vendor-specific configuration, including devices, workstations and applications.

Cane is an integrated set of Windows NT applications that includes a database with communications software tools, network simulation and a network product component library. It has tools for troubleshooting, documenting the network and evaluating changes.

Pricing starts at \$4,995.

► **ImageNet**
(617) 239-8197

Vcon, Inc. has unveiled LanPoint, an upgrade to its Armada Cruiser line of desktop videoconferencing products.

According to the Dallas company, LanPoint lets users perform PC-based videoconferencing over LANs that run the TCP/IP protocol. Users of Armada Cruiser products can now make video calls and perform collaborative functions including file transfer, electronic whiteboarding and real-time application sharing over LANs.

Vcon plans to add support for the H.323 standard for LAN-based videoconferencing. LanPoint costs \$99.

► **Vcon**
(214) 774-3890

Product short

Racal-Datcom, Inc. in Sunrise, Fla., has announced SafeDial V.34, a PC card designed to provide secure data communications and remote LAN access over public and private telephone networks. It combines Racal-Datcom's security encryption technology with a V.34 modem in a standard PC card format. Pricing starts at \$695. Racal-Datcom, (305) 846-1601.

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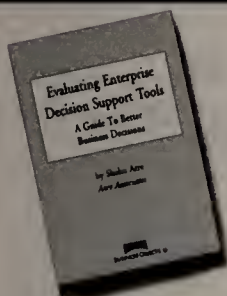
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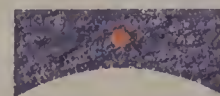
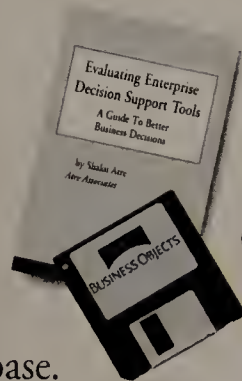
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THE NETWORK IS THE COMPUTER

Cisco details internetworking industry's broadest 'net product line, 78

The Internet

Rethink those links

Linking databases to Web is tough, costly

By Kim S. Nash

Linking World Wide Web servers to corporate databases can be a royal pain, partly because there is no single way to do it. The high price of siting a database behind a Web application also has deterred some users.

But making a Web/database connection is often necessary for many intranet systems, such as simple telephone directories or more complicated customer service applications. Some external Internet applications — order taking, package tracking — couldn't exist without Web/database links.

Fortunately, some creative information systems groups have found ways around the high price and high tension.

Options are available

One of the more popular ways to connect databases to Web servers, such as those from Netscape Communications Corp. or Open Market Corp., is to write connector code manually with Common Gateway Interface (CGI) scripts.

But running lots of CGI scripts at high-traffic sites can slow response time. A direct connection that cuts out the CGI middleman is faster, said Jean Anderson, an independent Web and database consultant in San Diego.

Expertelligence
WebBase Pro
\$4,995

MicroStrategy
DSS Web
\$50,000*

NetScheme
Solutions
InterMart Toolkit
\$695

OpenConnect
Systems
OC://WebConnect
\$319

Oracle
WebSystem
Price not available

*Price includes DSS server, an on-line analytical processing product

Getting there from here

A sampling of tools to help make the Web-database connection



A Web server that can get data from several relational databases at the same time

Lets users access MicroStrategy warehouses with Web browsers

A development kit for building links between relational databases and Web browsers

Emulates mainframe and minicomputer terminal inside a Web browser

A Web server and gateway between Oracle databases and Web browsers

For example, America Online, Inc.'s GNNserver can talk directly to Illustra Information Technologies, Inc.'s object database. Illustra programmers can embed SQL, the language understood by relational databases, in Hypertext Markup Language (HTML) documents. One scenario in which that would matter is on-line shopping. Orders placed by Internet users

would quickly update, say, an inventory database behind the scenes.

Although few Web servers can communicate directly with databases, more will have that capability soon, Anderson predicted. Users also can buy third-party packages to translate HTML to SQL or other database syntax (see chart).

Linking, page 78

substantially limit the kind of speech that can be transmitted over the Internet.

Several organizations, including the following, have launched protests.

● The Electronic Frontier Foundation (EFF) was founded by former Lotus chief Mitch Kapor to fight for personal privacy and rights in an increasingly electronic world. The EFF, which is now led by consultant Esther Dyson, urges webmasters to add an image of a blue ribbon to their sites to protest the CDA. The site, at <http://www.eff.org>, also provides full text of the Reform Act and the CDA.

● HotWired, the on-line cousin of *Wired* magazine, offers Banned Bookmarks. It is a list of sites that would violate the CDA. The list, at <http://box.hotwired.net/banned.html>, includes Playboy, the Cybernet Art Gallery, the text of the Roe

vs. Wade Supreme Court decision and the Internet Underground Music Archive.

● For the latest about proposals concerning medical records privacy, national identification cards and the infamous Clipper chip, check out the Electronic Privacy Information Center. A link at the site called "Former Secrets" connects users to scanned images of previously classified government documents. See <http://epic.org/>.

● For you hot shots who think you could have written a better CDA, here's your chance. By filling in nouns, verbs, adjectives and other words, you can rewrite — Mad Libs style — parts of the CDA at <http://fovea.retina.net/cgi-bin/gecko/regulate.cgi>. Check out masterpieces from other visitors, too. They're certainly not what Congress intended.

— Kim S. Nash

'net, LAN-based E-mail headed to common ground

By Tim Ouellette

Simple Internet electronic mailers may be winning the battle for some users' hearts, but LAN-based messaging systems could well win the war for business desktops.

Analysts expect vendors of proprietary LAN-based messaging systems and makers of inexpensive and easy-to-use Internet mail packages to battle for a middle ground. That's where users will get fast and open Internet mail with the management features and other extras usually found in the proprietary systems.

Because they are easy to use and usually cost well under \$100, SMTP/POP3 Internet standard mailers are gaining in popularity. But some areas may give users reason to rethink their options:

- No delivery confirmation
- Messages can become corrupted when stored as flat files
- No clear directory standard
- No track record of enterprise support

Source: Forrester Research, Inc., Cambridge, Mass.

"We are trying to get away from the three or four in-boxes on one desktop. It creates a major technical support issue," said Anthony Citrano, information systems director for the state of Maine. Citrano said some users have a mix of Internet mail, such as Qualcomm, Inc.'s Eudora, and LAN-based systems, including Lotus Development Corp.'s CC:Mail. But the state seeks to standardize on one common mail platform.

Users such as Citrano are the targets of Internet mail providers, which are trying to add features beyond E-mail to their packages. At the same time, LAN-based vendors such as Lotus, Microsoft Corp. and Novell, Inc. are adding support for Internet messaging standards such as Simple Message Transfer Protocol/Multi-purpose Internet Mail Extension and Post Office Protocol 3.

"It is a matter of who gets there sooner," said Eric Brown, an analyst at Forrester Research, Inc. in Cambridge, Mass. Because vendors can

E-mail, page 78



Sticky on-line issues

Just 2½ months old, the Telecommunications Reform Act of 1996 has met its share of criticism. The set of laws revamps the way telephone, cable and other communications companies can do business. But most fiery is the Communications Decency Act (CDA) embedded in it. The CDA, being debated in federal court, could

HP OpenView for Windows SNMP management platform, providing true, multivendor network management.



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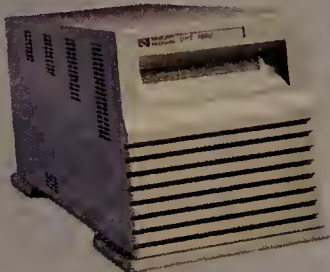


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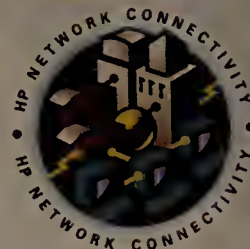
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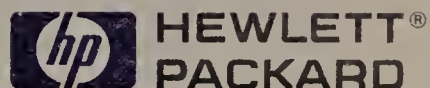
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SCANNER



Cisco details a complete 'net line

By Bob Wallace

Cisco Systems, Inc. is trying to broaden the ranks of the Internet-eligible by providing one-stop shopping for Internet wares.

The San Jose, Calif., router and switch vendor recently outlined its Internet strategy and related products in what users and analysts said is by far the most complete Internet product line to date from an internetworking company.

"We've been working on our Internet effort for about three years now and haven't seen this broad an array of flexible Internet products yet," said Blair Sanders, a senior member of the technical staff at Texas Instruments, Inc. in Plano, Texas.

Sanders said TI would welcome the chance to go to one vendor for its Internet needs, particularly after the company spent three years finding what it needed to piece together a World Wide Web page.

Cisco's one-stop-shopping strategy stems from its acquisition of three Internet products vendors: Internet Junction, Inc., Network Translation, Inc. and TGV Software, Inc. (see box at right).

Analysts said Cisco has an early lead in this market.

Cisco's recent Internet product announcements

Product	Function	Price
Internet Junction	Links NetWare LANs to the Internet	\$7,000 (starting price)
Private Internet Exchange	Address translation and security	\$9,000 (starting price)
LocalDirector and DistributedDirector	Evenly distributes calls to a home page among different servers	Not yet released

"The market is wide open, and Cisco is addressing more areas than its outside competitors," said Daniel Briere, president of TeleChoice, Inc., a consultancy in Verona, N.J. Briere warned that other vendors are teaming up to offer users the same one-stop shopping as Cisco.

Cisco's strategy addresses the three biggest Internet issues: the shortage of IP addresses, lack of security and high traffic volume.

Address shortage

Internet Junction's gateway product eases configuration by letting clients run Novell, Inc.'s IPX protocol stack to access the Internet without having to add an IP stack on each machine.

"We don't have IPX traffic, but I can certainly see why this product

would be very attractive to companies that do," Sanders said.

For example, the Internet Junction IPX-to-IP Gateway could let 10 clients on a NetWare LAN share the gateway's single IP. This obviates wasting addresses for clients that don't use the Internet heavily and also shields the NetWare server from intruders.

The Internet Junction software, which runs on Windows NT, will be available as a NetWare Loadable Module by June.

Security

Network Translations' Private Internet Exchange (PIX) gives users full firewall security between their company's servers and the Internet. It hides the layout of the internal network from outsiders.

PIX also can serve as a repository of unregistered IP addresses and connect them through a gateway to devices with publicly registered IP addresses.

This gives information systems managers a way to give unregistered users on a private internet access to devices on the public Internet.

Traffic volume

Cisco's TGV Software makes LocalDirector and DistributedDirector, products that ease demand on Web servers.

LocalDirector views all the servers that connect to a router as a single entity. It tracks sessions and server load and directs calls to the least busy server on the network.

The software uses a special algorithm that monitors server loads without incurring any overhead. It runs on any Intel Corp. Pentium platform with a Peripheral Component Interconnect bus.

DistributedDirector spreads calls among geographically dispersed server sites. It also calls and monitors server load to determine the best server for each incoming call. This helps balance call loads among multiple servers.

On the way

Cisco is providing a sneak peek at its Internet future.

Cisco currently offers the Cisco Web Server, which has a Hypertext Markup Language front end and runs on Microsoft Corp.'s Windows 95 and Windows NT, Sun Microsystems, Inc.'s Solaris and Digital Equipment Corp.'s OpenVMS.

The company's plans for the rest of this year include the following:

- Cisco Cluster Manager, software that runs on each server and performs load balancing and replication across Web and file transfer protocol (FTP) servers.
- Cisco DNS/DHCP Manager, a product that integrates DNS/DHCP with Browser Configuration.
- Cisco Server Suite, which includes Web Server, Cluster Manager, DNS/DHCP Manager, FTP, Network File Service and Print service. All initially will run on Windows NT and Solaris.

—Bob Wallace

Briefs

From HTML to 3270

Teubner & Associates, Inc. in Stillwater, Okla., is shipping a product to connect World Wide Web applications to IBM mainframes and minicomputers. Corridor translates the Web's Hypertext Markup Language to 3270 or 5250 terminal emulation format. It costs \$2,750 for 15 users.

Users can test the product, which comes with a 30-day money-back guarantee, at <http://www.teubner.com>.

Allaire Web ware

Allaire Corp. in Minneapolis has announced Allaire Forums, conferencing software for the World Wide Web and corporate intranets. Users can create discussion conferences hosted on Web servers without any programming. Anyone can access and customize their view of the forum from a Web browser.

Linking databases to Web is tough and costly

CONTINUED FROM PAGE 75

Meanwhile, big relational database companies are starting to negotiate discounts with users who want to anchor Web applications with databases.

Traditionally, Oracle Corp., Sybase, Inc. and others have charged a per-server fee and a per-user fee. Paying by the user for an Internet application, which

untold thousands of users could potentially access, isn't feasible.

Despite the discounts, price tags still are too high for many users, said Steve Waterbury, a computer-aided engineering specialist at the National Aeronautics and Space Administration in Greenbelt, Md.

Waterbury is creating an engineering database for NASA employees, contractors and universi-

ties. Most of the data already resided in a Computer Associates International, Inc. Ingres database. But adding thousands of users to NASA's Ingres license would have cost roughly \$100,000, Waterbury said.

Instead, NASA bought a less well-known — and far less expensive — database called /Rdb from Revolutionary Software, Inc. in Santa Cruz, Calif. For \$1,500,

Waterbury got eight /Rdb server licenses, each of which allows an unlimited number of users.

Database vendors must "rethink their Internet pricing because they have really missed the boat," said Steve Olson, technical director at Applied Information Technologies, Inc., an applications maker in Hanover, Md.

He said Oracle recently quoted him \$80,395 for a database and Web server for a single-processor Unix machine, with public Internet access and technical support.

E-mail

CONTINUED FROM PAGE 75

move fast to develop their own standards, whereas Internet standards take time to develop, "I believe Microsoft and Lotus can do the Internet dance sooner than Internet guys can get features and manageability," Brown said.

The traditional LAN-based packages offer a variety of integrated features — electronic forms, workflows and group scheduling, for example — that let users do more than just read their E-mail. Users can count on

delivery reliability and management features, things that elude Internet packages.

These LAN E-mail packages also will receive overhauls this year, as the vendors move toward more robust client/server systems that add even more

groupware features than before. This gives the estimated 29 million LAN-based and 47 million host-based E-mail users an enticing upgrade path.

But makers of Internet mail packages are beginning to focus on Internet Messaging Access Protocol, a new standard that will address their lack of management

capabilities [CW, April 1]. Vendors also are purchasing features; for example, FTP Software, Inc. recently bought Campbell Services, Inc. and gained the Southfield, Mich., firm's group calendaring software.

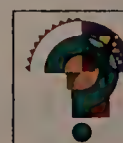
And the prospect of being free from vendor-proprietary protocols may give many users pause.

"The world has jumped out of the sheep line," said Ron Rasner, chairman of the Electronic Messaging Association's LAN messaging committee.

"If you take a look at what we've had to endure from the Big Three

vendors, in terms of complicated gateways and heterogeneity," it's no wonder many users are considering the homogeneous environment of Internet standards, Rasner said.

Either way, he agrees that E-mail won't stand alone much longer. "There is no question that E-mail as a separate function will disappear," Rasner said. "E-mail will be embedded in the operating system or the user's desktop of choice."



Four

New Products

NovaSoft Systems, Inc. has announced NovaWeb, an Internet gateway connection to its NovaManage document management system.

According to the Burlington, Mass., company, users can connect to the NovaWeb server and browse corporate document vaults with any World Wide Web browser. The product includes a series of Hypertext Markup Language search forms that let users identify desired documents by name, version and attributes. NovaWeb gives users access to documents for which they are authorized.

Pricing for NovaWeb will be announced April 15.

► **NovaSoft Systems**
(617) 221-0300

InfoStreet, Inc. has announced Instant Web Sites, a World Wide Web site service.

According to the Los Angeles company, Instant Web Sites lets individuals and organizations put up a Web page by filling out a simple form. Each Web site includes a high-speed connection, a selection of graphics, the ability to search multiple Web pages and the ability to receive electronic mail.

Instant Web Sites gives Web administrators a 24-hour Web server, nightly tape backups, automated indexing and Web site usage statistics.

Pricing for the product is based on hit rates. The base rate is \$30 per month, which includes 10M bytes of hard disk space and covers up to 30,000 hits per month. More information is available at InfoStreet's home page at <http://www.instantweb.com>.

► **InfoStreet**
(818) 788-8488

Durand Communications Network, Inc. has announced MindWire NT.

According to the Santa Barbara, Calif., company, MindWire NT is a live Internet applications server with an integrated World Wide Web server. It was designed to let companies offer Internet groupware applications, on-line services and dynamic publishing with existing Web services. The MindWire NT client lets Internet surfers connect to all public-access MindWire NT systems.

Pricing for MindWire NT starts at \$2,495 for a 10-user license. More information is available at Durand's home page at <http://www.durand.com>.

► **Durand Communications Network**
(805) 961-8700

Mortice Kerns Systems, Inc. announced Integrity Engine 1.0 for Microsoft Corp.'s Internet Information Server.

According to the Waterloo, Canada, company, Integrity Engine 1.0 automates change management and reduces bottlenecks in the development and publishing process. It was designed for webmasters and Internet and intranet project managers who manage change and team development on the World Wide Web.

Integrity Engine 1.0 lets authorized users access an audit trail of development,

check files in and out for editing, retrieve past versions of files and lock files to prevent overwrites.

A free version of Integrity Engine 1.0 is available at Mortice Kerns' home page at <http://www.mks.com>.

► **Mortice Kerns Systems**
(519) 884-2251

Grasp Information Corp. has announced KnowIt All 1.0, an information collector and

organizer designed for Internet and World Wide Web users.

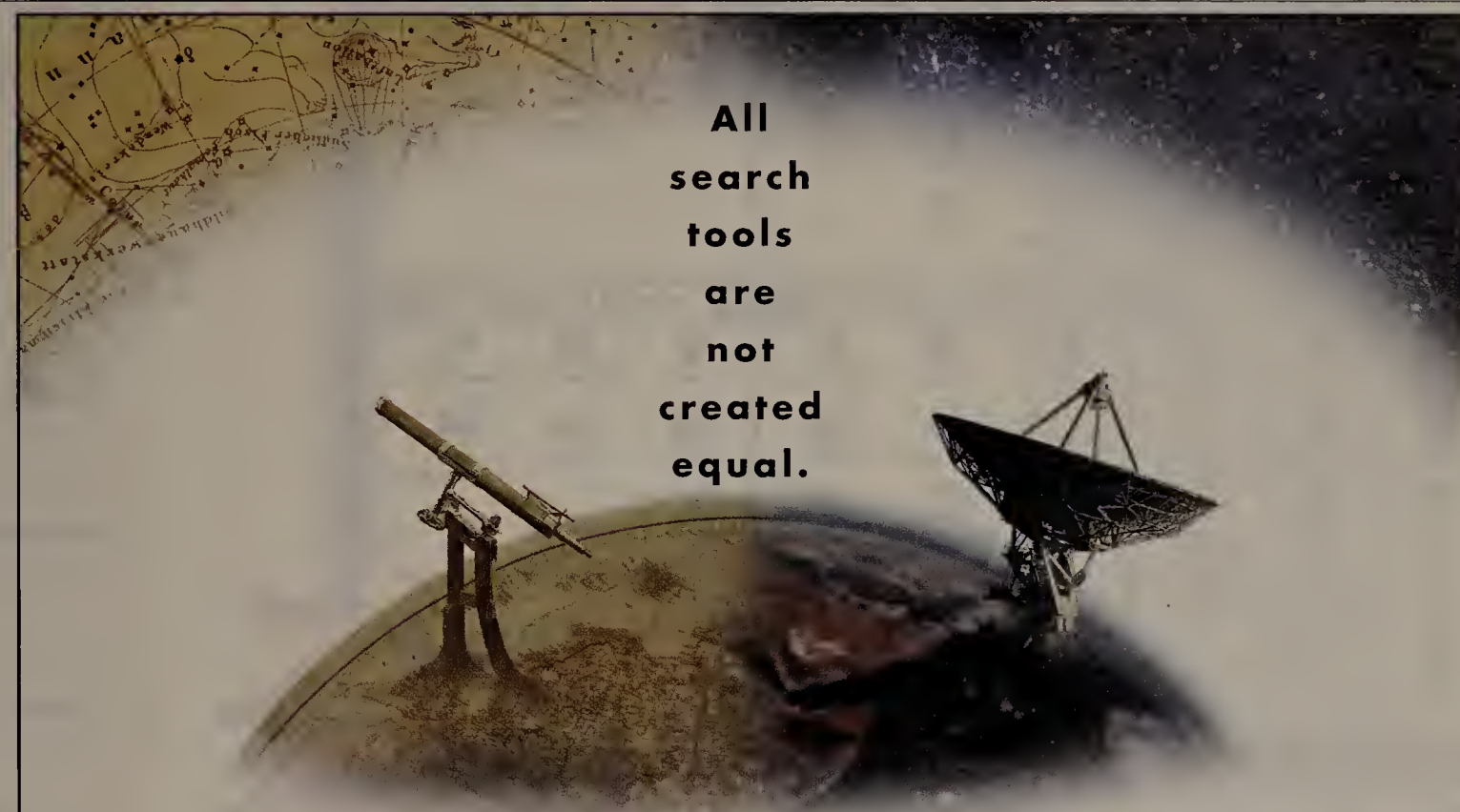
According to the Farmington, Conn., company, KnowIt All 1.0 lets users capture information on the fly directly from the Internet, on-line services, CD-ROMs and other electronic sources. The information can be organized and categorized by dragging and dropping it in to user-defined categories. It also can be manipulated into different textual and graphical views, outlines,

reports and presentations.

KnowIt All 1.0 works with all Web browsers and Windows-based applications. It captures source data and lets users add and modify notes to the information they collect.

KnowIt All 1.0 costs \$50. A 30-day trial version is available at Grasp Information's home page at <http://www.grasp.com>.

► **Grasp Information**
(860) 676-0355



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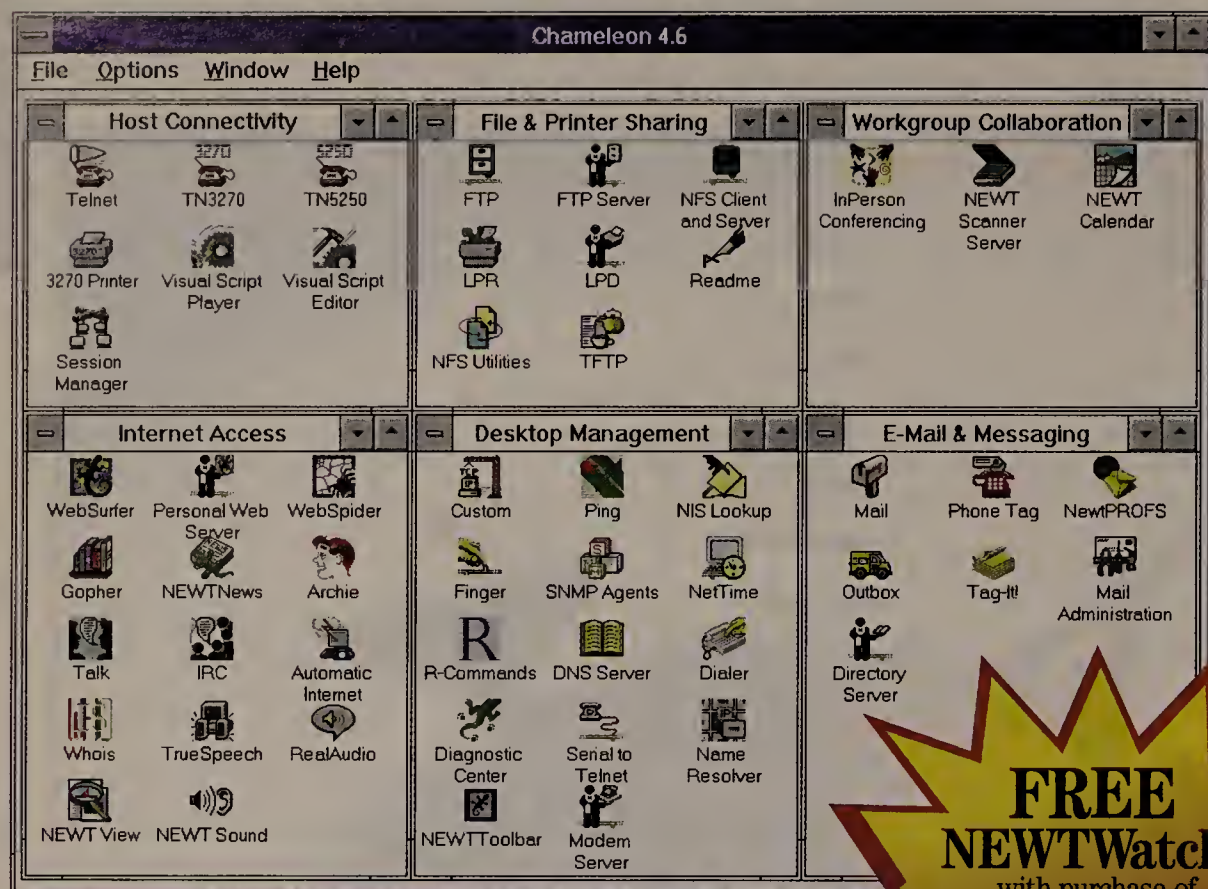
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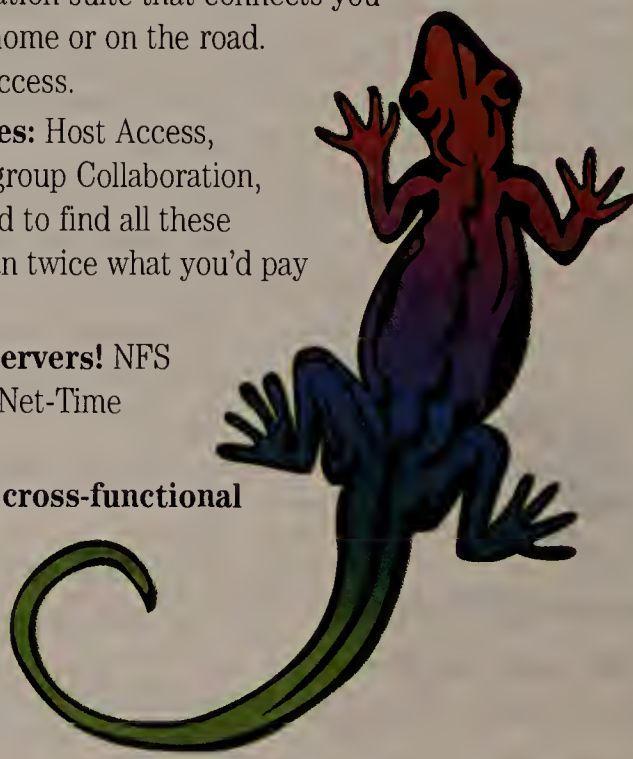
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Poll: IS managers are coming up too short, too often, **84**

Corporate Strategies

Value of misappropriated information, 1993 to 1995

Strategic plans

\$1.4B

Research and development information

\$1.35B

Manufacturing processes

\$566M

Marketing plans

\$460M

Intellectual property

\$440M

Financial data

\$360M

Merger/acquisition data

\$179M

Customer lists

\$167M

Personnel plans

\$114M

Other

\$170M

Total

\$5.2 billion

Base: 700 incidents reported by 113 companies

Source: American Society for Industrial Security, Arlington, Va.

Hack attack

Cyberthieves siphon millions from U.S. firms

By Gary H. Anthes

Losses by U.S. companies from theft of proprietary information are "spiraling upward," according to the American Society for Industrial Security (ASIS).

The frequency of losses due to hacking, bribery and various kinds of industrial espionage has jumped 323% since 1992, according to ASIS. That information is based on multiyear surveys, according to the group. The average loss per incident was \$26 million, and losses to U.S. industry overall are about \$2 billion per month, the Arlington, Va.-based society estimated.

The bad news is in a report, "Trends in Intellectual Property Loss." The statistics are based on survey results from 325 corporations that reported 700 incidents of actual and attempted crimes.

"Loss of strategic plans, [research and development] and manufacturing process information accounted for more than 60% of the financial losses," said Dan T. Swartwood, co-author of

the report. "It would be prudent to begin any review process with security procedures protecting those areas."

Citing a draft of the ASIS report in recent congressional testimony, FBI director Louis Freeh said, "These survey estimates clearly indicate that the actual and potential losses are immense."

The ASIS report's conclusions are supported elsewhere. The U.S. General Accounting Office last month reported that five U.S. allies are spying on U.S. companies, which poses a "significant threat to national security."

And in a recent alert, the Computer Emergency Response Team at Carnegie Mellon University cited software piracy as one of the top seven types of computer systems attacks.

Nearly three-quarters of the incidents reported by ASIS were carried out by employees, ex-employees and other trusted parties. "Because of corporate downsizing, there are a lot of disgruntled employees out there," Swartwood said.

The exposure that companies face from insiders is unnecessarily acute because many companies have poor or nonexistent security policies and practices. ASIS said fewer than half of the survey respondents reported having written security policies. Of those corporations with security policies, only 60% have security training and awareness programs for employees.

According to ASIS, the most common form of attack is an outsider who calls an employee and gets confidential information under false pretenses.

Richard J. Heffernan, co-author of the ASIS report, said managers have a personal stake in information security. "They must realize they have a fiduciary responsibility for the protection of information. In the future, you'll see stockholders and others holding them accountable," he said.

Each member of Congress received a copy of the report earlier this month. Heffernan said he hoped it would speed passage of three bills that seek to protect U.S. trade secrets.

Thin clients can help cut desktop software costs

By Thomas Hoffman

What do fitness guru Richard Simmons and data warehousing managers have in common? Both are obsessed with "thin clients."

Thin clients let remote users download static sales reports and other predefined analyses by using cheap World Wide Web browser software and corporate intranets. The software is often based on on-line analytical processing (OLAP).

Several vendors have introduced such Web-based OLAP software in the past two months, such as MicroStrategy in Vienna, Va., which unveiled a package called DSSWeb. Competing soft-

ware includes DataFountain from Dimensional Insight, Inc. in Burlington, Mass., and packages from Information Advantage, Inc. in Edina, Minn.

Cost cutter

Use of thin-client systems can dramatically reduce the cost of desktop software. For example, typical decision-support client software costs from \$700 to \$1,000 per desktop — and those figures don't include hardware upgrades that are often needed to run these applications, said Robert Moran, an analyst at Aberdeen Group, Inc. in Boston.

Internet browser software — when it's not being downloaded

free — costs as little as \$50 a copy.

The Web-based tools are less exotic than traditional ad hoc query tools, which data miners use for queries such as "How many diapers did we sell in New Mexico to white men age 25 to 39 who also bought beer?" Information systems managers say they're drawn to the simpler packages because the cost of supporting and distributing "fat client" query software to remote users is expensive.

The information systems group at SC Johnson Wax in Racine, Wis., maker of household prod-

"We should be able to save a lot of time and money in distributing data and applications."

— Dave Talsky,
IS manager,
SC Johnson Wax



distributing data and applications to them," said Dave Talsky, an IS manager at SC Johnson Wax. He said his group plans to test other 'net-enabled data warehousing packages in the next few months before it decides on a product.

Hannaford Bros. Co. in Portland, Maine, also

has tested DSSWeb for use by store managers in its 140 grocery stores in the eastern U.S. Potential benefits are "an easy-to-use, inexpensive interface for store managers [who] might not have time for complex analyses," said Rich Schilling, a project director.

ucts, began testing DSSWeb six months ago to run queries against a Sybase, Inc. customer point-of-sale database.

"If our salespeople can use one browser as a front end to our data warehouse, we should be able to save a lot of time and money in

to bridge
the gap between people and answers



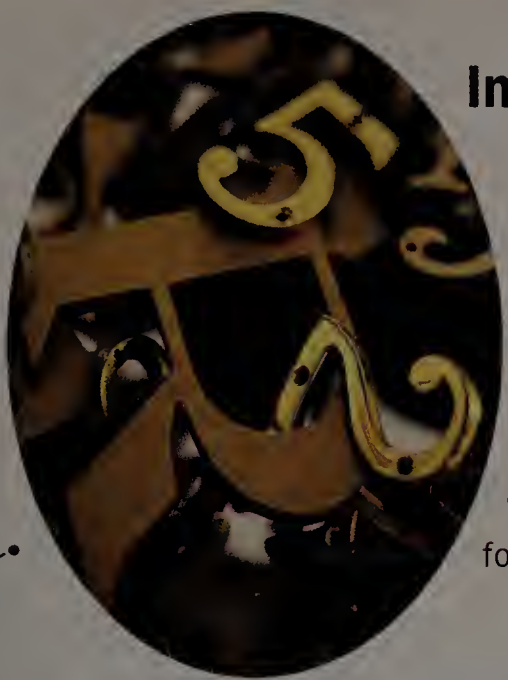
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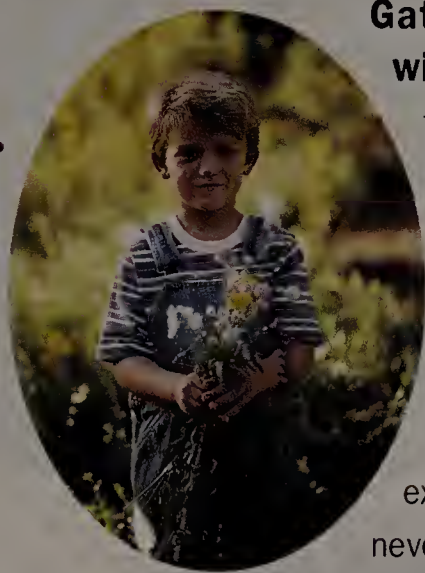
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CIOs: Vendors can improve on several fronts

By Dan McLean
TORONTO

Vendors still have a long way to go to meet the needs and demands of IS professionals, judging from the comments of CIOs who participated in a panel at the recent 1996 Client/Server Leadership Forum.

The panel's four chief information officers said information systems vendors must show greater leadership and do a better job of designing products that help corporations implement

client/server technology.

Mike Velshi, chief technology officer at Royal Bank, said better-quality products is at the top of his wish list. "The quality assurance process, in too many cases, leaves too many defects for the customer to fix," he said. "For us, this is the most major issue with software suppliers."

Take the long view

Vendors also must articulate a clear statement of their long-term product directions, Velshi said.

He pinpointed the future of middleware and software development tools and independence from operating systems as issues vendors must more clearly define.

Velshi also called for more agreement on standards, or at least fewer "standards wars."

"We struggle with how to bring about standardization and yet encourage innovation," he said. "Ours must be the least standardized industry around." Finally, business needs more help from vendors to manage technology,

according to Velshi.

Other CIOs backed up his points.

Bob Little, chief informatics officer for the Canadian government's Treasury Board, challenged the attending vendor panel — which included the Canadian heads of IBM, Digital Equipment Corp. and SAP AG — to help business

manage its client/server systems.

"We are not, by any means, confident in our ability to manage, without a lot of support and participation," he told them.

"You are certainly welcome at any time ... to provide your views and [offer up] particular approaches we should be aware of and the opportunity to work together."

Jennifer Thompson, vice president of information services at Canadian Tire Corp., highlighted a number of areas where vendors can assist, including software delivery, decision-making and skills.

"We do need a lot of credibility within our organizations ... so it's very important to deliver our solutions on time and with quality," Thompson said.

"I count on software vendors to do that as well because, if they're

in the business of making software and can't be on time, what opportunity do we have to be on time?" he asked. Both CIOs and vendors said they have a shortage of qualified staff and need continued training. And vendors and their customers often compete for

the same people, a situation that is a major headache for at least one CIO

Support issues

panel member.

"If you [vendors] think you have trouble maintaining skills ... every time we have anybody appropriately ready, they seem to be attracted by the fact that they can get anywhere from 30% to 50% more money going to work for you," Little said.

Roman also said partnerships and joint ventures with vendors will help corporations "make the long journey toward client/server."

"I find it very difficult to believe that this industry is not capable of better understanding what our problems are and what we are trying to accomplish," he said. "What you can do for us is to have a better understanding of what our problems are."

This story has been adapted from Computerworld Canada.

Briefs

The missing link

Prudential Securities, Inc. has signed a three-year \$2.5 million contract with **CrossComm Corp.** for networking products and services. They will link Prudential's 250 to 300 branch offices to New York headquarters. Installation of a frame-relay network and Integrated Services Digital Network dial-in backup capabilities will be carried out through June.

Storage firm boxes out

Public Storage, Inc. in Glendale, Calif., has outsourced its mainframe computer operations to **Affiliated Computer Services, Inc. (ACS)** in Dallas. Under the three-year deal, ACS will install and operate a cluster of three midrange machines to support operations at Public Storage's 1,100 miniwarehouses nationwide. Financial terms of the agreement weren't disclosed.

Brazil bank goes client/server

Banco Bamerindus do Brasil, Brazil's third-largest private financial institution, has contracted **Hewlett-Packard Co.** to build a \$40 million client/server infrastructure that will support more than 3,000 of the bank's branches.

Firewall bows

Trusted Information Systems, Inc. in Glenwood, Md., has announced additional members of its Gauntlet firewall family of products. Gauntlet PC Extender uses encryption to ensure secure connections over a public network and among corporate hosts and mobile us-

ers. Gauntlet Intranet Firewall provides a similar function among subnetworks, or intranets, within a company and between an intranet and an external network.

Mega-user group being formed

The Technology Association Leaders' Council (TALC) has formed to help user groups and other associations expand their influence in the computer industry. TALC, which is being organized by Bruce Freeman, president of the Northeast Technical Association, will meet June 20 at PC Expo in New York from 1 to 3 p.m. in Room 1D03 of the Jacob Javitz Convention Center. For more information, contact Freeman at (201) 716-9457.

Panasonic installs warehouse system

Matsushita Electric Ltd. European Television Division, which produces Panasonic television sets for U.K. and overseas markets, has installed a \$465,000 logistics and warehouse management system at its manufacturing site in Cardiff, England. The system, supplied by JBA International in Mount Laurel, N.J., replaces a mainframe system that runs custom software.

Wal-Mart buys tools

Wal-Mart Stores, Inc. has purchased a series of merchandising productivity tools from Dallas-based **Intactix International**. The software was designed to help Wal-Mart customize and adapt its merchandising assortments to meet local market require-

ments. The Bentonville, Ark.-based retail giant expects the tools will help it increase the profitability and productivity of its selling space. A pilot program is slated for launch later this month followed by full implementation later this year.

IBM creates health net

IBM has been contracted by **VHA, Inc.**, a health care alliance in Irving, Texas, to create a network infrastructure based on the IBM Global Network and Lotus Notes. IBM will develop software applications that will let VHA communicate more effectively with its health care organizations and partners.

Client/server app links units

Weyerhaeuser Co. has signed **SHL Systemhouse, Inc.** to provide its containerboard packaging business with a distributed client/server system to link various aspects of its business across the U.S. Functions to be addressed include inventory management, electronic data interchange and shipping. The project began March 31; it is scheduled to last 34 months.

Air Force to launch virtual warehouse

EnterWorks.com, a Telos Co. unit in Herndon, Va., has won a contract to provide its Virtual DB software to the U.S. Air Force Air Intelligence Agency (AIA) as part of an AIA data warehousing initiative. Under the "Sensor Box" project, the AIA plans to provide data mining access among several inter-agency managed networks.

Web-based search tool bows for IS staffers

Directory yields product, vendor info

By Randy Weston

Information technology professionals now have a free search engine to call their own.

Inquiry.com, Inc. in San Mateo, Calif., recently released a World Wide Web-based version of its Interactive Product Search Directory (IPSD).

This is a directory of vendors, product information and development tips. The directory also contains more than 100,000 trade publication articles from such journals as *InfoWorld*, a sister publication of *Computerworld*.

Brad Meinert, an Internet analyst at Input, Inc., a market research firm in Mountain View, Calif., said there is a growing trend toward custom search engines such as Inquiry.com's IPSD, which help to simplify "net surfing." "There seems to be a new search engine almost weekly," Meinert said.

"Certainly, a lot of this technol-

ogy is going to be directed at corporations who can add value to their Internet site with a link to a specific search engine instead of a general one," he said.

Smaller field

Reed Taussig, president of Inquiry.com, said he developed his service for information technology professionals.

With IPSD, they would be able to find specific product information without having to wade through the sometimes thousands of listings that can arise when people use more general search tools, he said.

The service is free for information technology users, but vendors must pay to be included in the database.

Taussig said the payment plan is based on use; if someone downloads a demonstration copy of a vendor's software or orders the software itself, the vendor is charged.

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Managing

Timothy King sighs as he looks at the photographs beside his desk. His wife, Beverly, poses casually in one picture. In another, his sons, 2-year-old Tyler and 4-year-old Matthew, crouch inside two playground tires and grin. "On stressful days," King says sadly, "I have gone home and yelled at them for spilling a drink or doing other things that are normal for a child to do." And there are other days when King, a LAN administrator at Ropes & Gray law firm in Boston, barely sees the kids at all.

Most managers worry that people's family problems will enter the workplace, but they've got it backward: Workers are three times more likely to bring work problems home than to suffer at work from the effects of family problems, according to a 1992 survey of 3,000 workers (including information systems staffers). The poll was conducted by the Families and Work Institute in New York.

These pressures are greater in IS than in almost any other profession, contends Linda Braun, executive director of the Families First Parenting Program in Cambridge,

Mass., a nonprofit affiliate of Boston's Wheelock College. The parenting program provides skills and support to parents.

IS workers "are on call during odd hours ... and they absorb a lot of other people's frustrations," Braun says. "It is a very unusual person who can have a difficult day at work and leave it behind."

And IS professionals feel they must put in the time and accept the aggravation. "People are making choices that are pretty gut-wrenching these days," says Stewart Stokes, senior vice president at QED Infor-

mation Sciences, Inc., an IS education and consulting organization in Wellesley, Mass. "They're afraid if they don't put in the hours, there's someone standing in line outside their door who will."

The technological tether

It's 4:30 a.m. Saturday in Columbus, Ohio. The bars and clubs have closed, and Melissa Ratchford is troubleshooting a T1 line while her 10-year-old son sleeps sprawled across two office chairs.

"I've gotten paged at midnight, 1 a.m., 4 a.m. ...," says the data communications analyst at Huntington Service Co., a subsidiary of Huntington Bancshares, Inc. Ratchford says her beeper has become a "ball and chain."

Technology has eliminated the boundaries between work and home. Network administrators and support specialists are on call around the clock.

Other IS workers fall victim to production promises that border on the insane. "A manager for a major communications company told me recently they tried to get a product out in nine weeks," says Robert

Zawacki, a consultant and professor emeritus at the University of Colorado in Colorado Springs. Zawacki specializes in IS organizational issues. "Their people are working 70 hours a week," he says.

For management IS workers at Ropes & Gray, the "end of the week" has become a distant memory, says Donald Bergstrom, MIS director.

As the firm moves to a client/server network, Bergstrom says he has at least three specialists working each weekend, and networking professionals are in the office three Saturday nights a month. "We were led to believe that the PC networks would be easier and cheaper to run. ... We are all dealing with the fact that [that] did not turn out to be the case."

Out of control

It's not just the marathon work weeks that can cause employee dissatisfaction; it's the sense of helplessness that the workload creates, particularly among IS people on the operations side. Information technology work attracts and requires people who value logic, control and realistic time lines.

**Burned out.
Downsized.
On call 24 hours a day.
IS professionals and
their families are the
real victims of the
new workplace.**

By Natalie
Engler

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IS managers can help IS staffers such as Timothy King (pictured here with his family) balance work and home life



PAUL STRASSMANN:
The computer paradox is alive and festering, page 88

Highlights from CSC's annual Top IS issues survey, page 90

"When these people find themselves in roles where they have more disruptions, are putting out fires and dealing with things they can't anticipate, they tend to feel more helpless than a corresponding person in a marketing or sales function," says Gerry Kraines, a psychiatrist at Harvard University. He is also president and CEO of the Levinson Institute, an executive development and organizational consulting firm in Boston.

The resulting job dissatisfaction leads to work/life imbalance, Stokes observes. "People who confess to being less satisfied with their jobs also admit that their work and nonwork commitments are out of balance," he says.

Home improvements

IS managers can take the following steps to help their staff members regain some balance in their lives:

- **Set boundaries.** "One of the things I've seen information technology managers do better than [in] almost any other profession

is confront [their bosses] with reality," Kraines says. Those "who define their projects well are in a better position to define the limits of what is work and what is personal, and [they] adhere to those limits."

But if the mainframe goes down, "all hell breaks loose, and you literally have no control over your life," he says. IS professionals and their families must come to terms with that powerlessness.

"Those who don't are in for trouble forever," Kraines says.

draw the line between work and family. "I try to let people know that I think family is important, and I don't expect them to sacrifice that for the job," says Gary Pietrangelo, support center manager at Huntington Service Co. and a husband and father of four. Michelle Green, a data communications analyst at Huntington, says Pietrangelo's attitude makes a difference. As a wife and mother of three boys, "If I have an important event, [missing it] for day-to-day stuff at work is not even a consideration."

- **Create a community.** "Do anything you can to build strong relationships among colleagues," Braun suggests. Schedule regular staff meetings, encourage people to talk about their lives, plan activities and events — whatever it takes to build an atmosphere of trust. When a family crisis arises, there will be a support network of workers who will back up one another.

- **Create strong core values.** These help you and your staff

- **Provide recognition and rewards.** "The high points of the job are when we hear that we are appreciated for the work we do," King says. But rewarding people for going beyond the call of duty also may add pressure. It's better to create an environment where personal balance is rewarded and appreciated, says Bruce Cryer, executive director of the Corporate Programs Division at the Institute of HeartMath, a nonprofit center in Boulder Creek, Calif.

- **Discover your firm's resources.** Be aware of the programs available to employees, suggests Beth Fredericks, product manager at Work/Family Directions, Inc., a consultancy in Boston. That way, when an employee is overwhelmed, you can easily refer them to the appropriate place for help.

- **Offer opportunities for closure.** King says some days are so rewarding, he would work for free. "Those days come when we are given the time and the resources to take a project from start to finish and succeed," he says.

Engler is a freelance writer in Cambridge, Mass.

BOOKS

The Addictive Organization: Why We Overwork, Cover Up, Pick Up the Pieces, Please the Boss & Perpetuate Sick Organizations
By Anne Wilson Schaef and Diane Fassel (Harper & Rowe, New York, N.Y.; 1988).

Managing Stress: Emotion and Power at Work
By Tim Newton, Jocelyn Handy and Stephen Fineman (Sage Publications, Beverly Hills, Calif.; 1995)

Transforming the Mature Information Technology Organization: Re-energizing and Motivating People
By Robert Zawacki, et al. (EagleStar Publishing/Zawacki & Associates, Colorado Springs; 1995. E-mail: robertz@zawacki.com)

Computerworld's annual job satisfaction survey studies stress levels in the IS profession. Last May, 62% of IS middle managers and non-managers said stress levels had increased in their department from 1994. Our next survey will appear in the Careers section on May 27.

Spending without results?

The origin of the term "computer paradox" has been attributed to my statistics teacher and the Nobel Prize winner in economics, Prof. Robert Solow. Solow was searching for evidence of computer-induced gains in productivity numbers, as reported in national economics statistics. He couldn't find such proof and finally gave up the search. The numbers coming from Washington weren't sufficiently reliable for anybody to figure out whether computerization or any other influence had any effect at all.

Paradox revisited

As an engineer, I prefer measurements that can be repeated, especially if I know that somebody has engaged in an organized effort to secure the data.

Instead of following economic statisticians, I like to examine the results produced by accountants and auditors. Annual reports from corporations contain data about revenue, employment, profits and assets.

Collecting information about what happens to firms in a period of several years isn't difficult. Obtaining information about computer expenditures is much harder. The best numbers that are publicly available are the ones reported by computer magazines about information technology budgets.

I managed to accumulate the annual information technology budgets for 138 giant U.S. corporations; the figures were from 1988 through 1994. This includes the budgets of firms such as AT&T Corp., General

Motors Corp., Rockwell International Corp. and Xerox Corp. I estimate that this sample accounts for about half of information technology spending for Fortune 1,000 corporations.

Knowing information technology budgets and the corresponding financial performance makes it possible to test whether or not there is a "computer paradox." If the growth in information technology spending is less than growth in profitability, then the paradox would be exorcised. It couldn't be raised as a challenge to the credibility of computer advocates.

The facts

I found that at a 67.4% gain, information technology budgets increased much faster than revenue (29.6%) and profit (39.7%). Only employment spending lagged, growing only 2.3% (see chart below).

These differences in growth rates don't reflect favorably on the contri-

butions of information technology. Furthermore, the Sales, General and Administrative (SG&A) overhead — the line on financial statements, where information technology expenses are normally incorporated — has grown faster than revenue or profit. If high investments in computerization resulted in improved productivity, then SG&A should slow down as compared with revenue. That would indicate the computer payoff in terms of lower overhead expenditures, which would lead to increased profit.

It didn't happen.

Some of the following ratios explain why (see chart below).

Information technology budgets have grown relative to all other indicators and are greater than profits for 56% of corporations.

Information technology per-capita spending in 1994 averaged \$4,970 per employee; this cost may be the second-largest indirect expense after health, pension and other personnel benefits.

The increasing information technology cost ratios are giving many

Paul
Strassmann



Computer expenditures are definitely up. The productivity gains from all that spending are definitely questionable.

chief information officers the attention they always wished they had.

There is some reason to believe that the relative importance of information technology is understated.

Local operators are becoming more inclined to acquire hardware, software and consulting services that don't show up in the information technology budget. In some companies, that makes the calculation of the productivity gains from computers confusing enough to further cloud the issue.

Based on as good data as one can get, I conclude that, for most companies, it may be too early to

banish the "computer paradox" to oblivion, despite reports by leading magazines of its demise.

The only thing to do is to make sure that the rise of computer spending doesn't get ahead of the gains in profitability and productivity. ■

Strassmann served as chief information officer at several major organizations, beginning in 1961. He can be reached at paul@strassmann.com or <http://www.strassmann.com/>.

Information technology spending has increased faster than revenue, profits, administrative overhead and employment, whether measured in dollars . . .

(In millions)	Growth	1988	1990	1992	1994
Total IT budget	67.4%	\$28,061	\$37,544	\$40,723	\$46,973
Total SG&A*	41.9%	\$256,366	\$308,246	\$346,722	\$363,706
Total profit	39.7%	\$85,321	\$73,500	\$64,290	\$119,213
Total revenue	29.6%	\$1,587,648	\$1,813,275	\$1,882,909	\$2,057,344
Total employees	2.3%	9,235,000	9,507,673	9,442,407	9,450,434

* Sales, general and administrative expenses

. . . or as a percentage of the following standard business measures:

Information technology as a percentage of spending:	1988	1990	1992	1994
IT spending per employee	\$3,039	\$3,949	\$4,313	\$4,970
Total revenue	1.8%	2.1%	2.2%	2.3%
Total profit	32.9%	51.1%	63.3%	39.4%
Total SG&A	11.0%	12.2%	11.8%	12.9%

Source: 138 U.S. corporations that account for about half the IT spending for the Fortune 1,000



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Factoid heaven

IS trend junkies, start salivating – your survey just came in. Computer Sciences Corp. (CSC) in El Segundo, Calif., recently released its much-quoted annual survey ranking critical information systems management issues. Here's what's up, what's down, and what's left us bewildered.

Senior IS executives from 346 North American companies with revenue of more than \$250 million responded to this survey by the giant consulting and systems integration outfit. Full survey results won't be available until summer. To reserve a copy, call CSC at (800) 272-0018.

Hot trends

Aligning IS and corporate goals

Perennial No. 1 is more important than ever. 72% of respondents say it's a critical IS management issue, 15% more than last year.

Outsourcing

More than 75% say they outsource some IS activity, compared with 45% last year.

IS budgets are up

The average budget increase this year is expected to be 5.4%. It was 4.6% last year.

Using information technology for competitive breakthroughs

Old theme surges back; it's in fourth place this year, from 13th last year. Tied with "integrating systems" and "capitalizing on advances in information technology."

Organizing and using data

Cited by 71% of users, it's the only item on CSC's list that's in the same league as alignment.

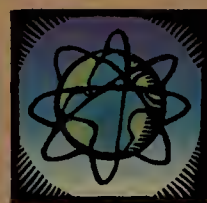
Updating obsolete systems

54% of IS managers cite this as a top issue this year. That's 10 points more than last year.



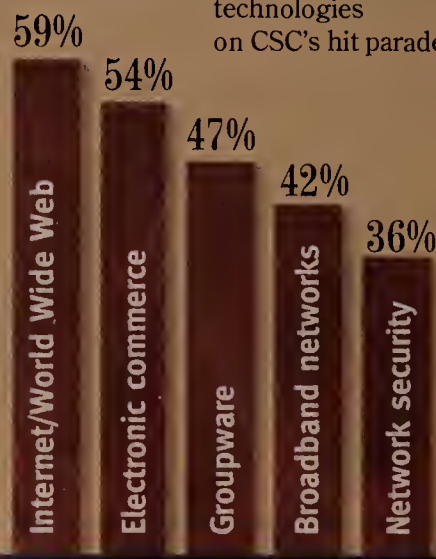
Don't be smug, pal

60% say their IS organization is effective or very effective . . . but just 41% think their internal customers agree.



Technology on the march

Top 5 emerging technologies on CSC's hit parade



Multiple responses allowed.

Down, but not out

Re-engineering

Dropped from fourth place last year to 10th this year. Still, 50% of respondents cited it as a top issue this year, just 2 points less than last year.

Improving the IS human resource

Dropped from fifth place last year to 11th this year. That amounted to just a one-point drop, to 48%.

Bad news for CIOs



Nearly 40% of respondents, up from 33% last year, said their company has replaced

its top IS executive in the past two years. This year, 56% say their new chief information officer came from another company; last year, 45% said so.

What the heck?

Two findings that left some Computerworld editors wondering . . .



CSC ASKED: What are the three greatest contributors to the success of your IS organization?

Respondents: Only 4.6% list communication skills.

We say: Only 4.6%? No wonder so many users think IS doesn't understand their needs.

CSC ASKED: What are the three greatest obstacles that keep you from being a more effective IS organization?

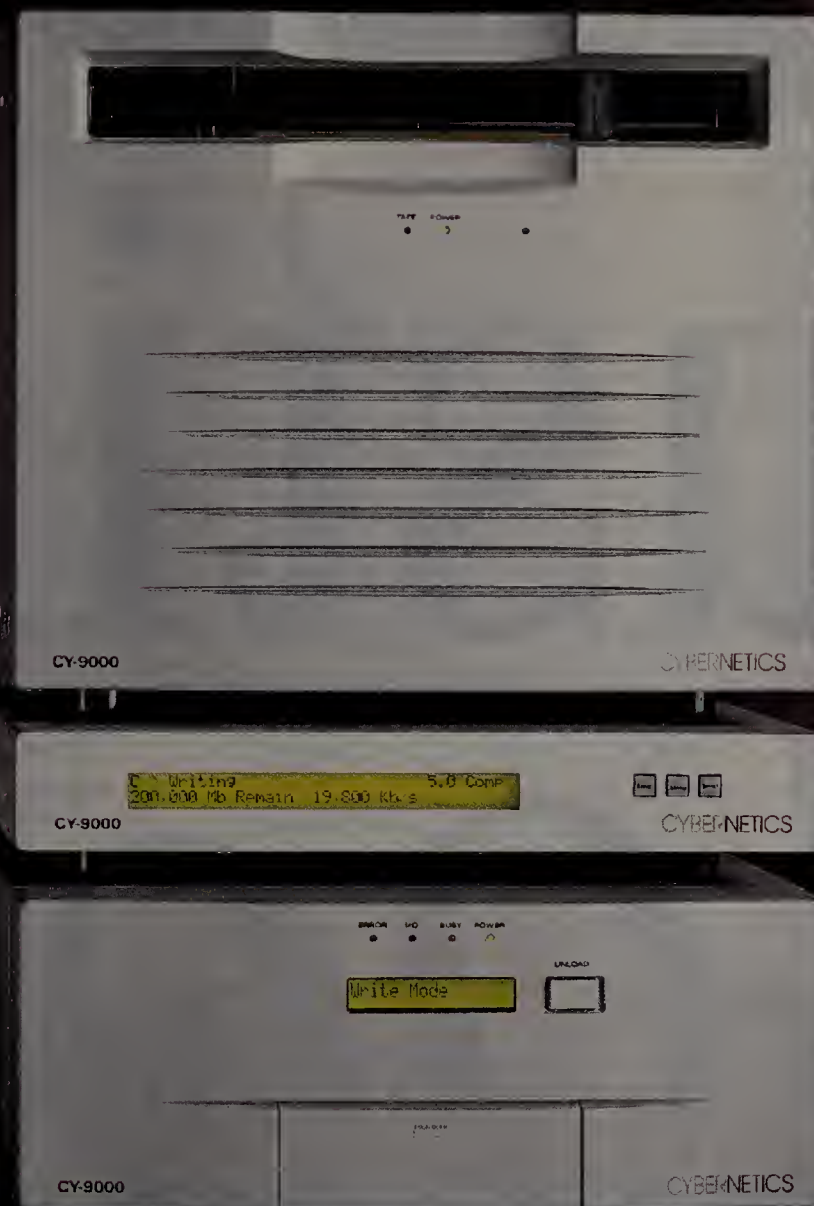
Respondents: The Top 3 obstacles are budget/cost constraints, lack of corporate management commitment or awareness of information technology, and lack of resources.

We say: If you want to reduce the CIO turnover rate, stop blaming your problems on others.

Are the respondents' answers off base? Tell Managing senior editor Allan Alter at allan_alter@cw.com.

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The CY-9000 half-inch digital DTF drive is a breakthrough in performance that slashes backup and restore time while providing unsurpassed reliability and data integrity.

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1/2" Technology	Transfer Rate (Native)**	Tape Capacity (Native)**
CY-9000 DTF	→→ 12 MBS	→→ 42 GB
3590	→→ 9 MBS	→→ 10 GB
VHS	→→ 8 MBS	→→ 27.5 GB
3490	→→ 3 MBS	→→ 800 MB
DLT 4000	→→ 1.5 MBS	→→ 20 GB

The cost of system time varies from site to site, but a recent study has put the cost of a medium sized PC LAN at **\$18,000 per hour** — and the cost of a UNIX network at **\$30,000 per hour**.^{*} Numbers like that make it easy to understand how a backup/restore solution that can do its job faster can save you serious money.

For example, for a single 40 GB restore, the CY-9000 will save you...

**\$9,000 over 3590,
\$13,500 over VHS,
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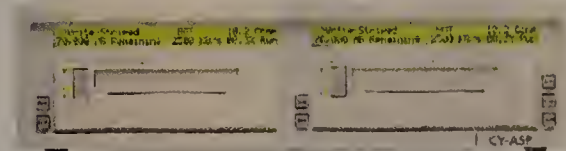
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^{*} Sentry Market Research

^{**} All drives, except VHS, are available with data compression.

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MARC YANEK

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13. Treasurer, Controller, Financial Officer
- DEPARTMENTAL MANAGEMENT**
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 - 90. Other Titled Personnel
3. Do you use, evaluate, specify, recommend, purchase: (Circle all that apply)
- Operating Systems**
- | | |
|-------------|----------------|
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| (b) Netware | (f) Windows NT |
| (c) OS/2 | (g) Windows |
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- App. Development Products** ☐ Yes ☐ No
- Networking Products** ☐ Yes ☐ No

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 - 50. Business Service (except DP)
 - 60. Government - State/Federal/Local
 - 65. Communications Systems/Public Utilities/Transportation
 - 70. Mining/Construction/Petroleum/Refining/Agriculture
 - 80. Manufacturer of Computers, Computer-Related Systems or Peripherals
 - 85. Systems Integrators, VARs, Computer Service Bureaus, Software Planning & Consulting Services
 - 90. Computer/Peripheral Dealer/Dist./Retailer
 - 95. Other _____
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 - 23. Dir./Mgr. Sys. Development, Systems Architecture
 - 31. Programming Management, Software Developers
 - 41. Engineering, Scientific, R&D, Tech. Management
 - 60. Sys. Integrators/VARs/Consulting Mgt.
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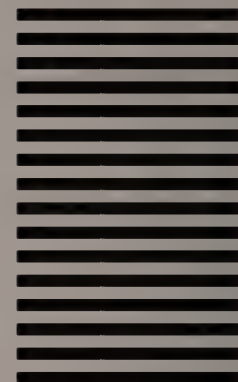
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- 51. Sales & Mktg. Management
 - 70. Medical, Legal, Accounting Mgt.
- OTHER PROFESSIONAL MANAGEMENT**
- 80. Information Centers/Libraries, Educators, Journalists, Students
 - 90. Other Titled Personnel
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|-------------|----------------|
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| (b) Netware | (f) Windows NT |
| (c) OS/2 | (g) Windows |
| (d) Unix | (h) NeXTstep |
- App. Development Products** ☐ Yes ☐ No
- Networking Products** ☐ Yes ☐ No

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By Rosemary Cafasso

you won't be seeing voice and video or Internet transactions in your typical accounting database any time soon. But many information systems shops are laying the groundwork for a new generation of corporate databases that will manage a broad range of data types.

"We don't want to limit ourselves because we can't tell what the future requirements will be," says David Oglesby, MIS director at General Communications, Inc. (GCI), a telecommunications company in Anchorage, Alaska. GCI recently upgraded to Cincom Systems, Inc.'s Persistence Framework, which includes a hybrid relational-object database. "We want to be able to store various types of data," he says.

Gartner Group, Inc. would say GCI is about on schedule. Complex data types and object management is "today for type A organizations," says Kevin Strange, a research director at Gartner Group. "We see it becoming mainstream by the year 2000, and it will be the next battleground."

The top dogs in databases understand this. Even though today most of their customers may not be ready for complex data types, the database companies want to be established providers of next-generation systems when the bulk of

Busting loose, page 96

WARNING!

Don't mix objects and complex data types

Objects and complex data types aren't the same. Put very simply, **object technology** is a broader concept that applies not only to databases, but also to middleware and development tools. An object strategy can include an infrastructure, a database and applications. Object-oriented databases depart from the traditional relational model of rows and columns and are optimized to store objects. **Complex data types**, on the other hand, is a term used to designate unstructured, nonrelational data and is usually applied to well-known data types such as voice, video, text and images.

HOW COMPLEX IS IT?

Vendors tip their hands

Here are some of the key vendors' plans for new generation databases designed to deal with complex data types.

- **IBM, Armonk, N.Y.** IBM has announced complex data management capabilities for the OS/2 and AIX versions of DB2/2, which started shipping last year. The company first offered text data support in DB2/2 earlier this year. It plans to incorporate support for voice, video, image and fingerprint data in the next three months.
- **Oracle Corp., Redwood Shores, Calif.** Oracle in February launched Universal Server, a set of Oracle software components, including the latest release of its

relational system — Oracle Release 7.3 — and Web, multimedia, multidimensional, text and messaging software. Mark Jarvis, vice president of server marketing, says the current Universal Server provides "about 90% of what people are asking for" to manage complex data types. Oracle 8, the full-blown object version of its flagship database, is due out next year.

- **Informix Software, Inc., Menlo Park, Calif.** Informix announced its own Universal Server product — three weeks ahead of Oracle. Common names aside, Informix plans to make available by year's end a fully extensible relational database that includes its own relational and object technology that it picked

up by acquiring Illustra Information Technologies, Inc. last year. The software will handle several data types, including numbers, images, maps, sound, video and Web pages. It will also manage user-defined data types. A developer's version is scheduled to ship by the end of the second quarter.

- **Computer Associates, Inc., Islandia, N.Y.** CA teamed up with Fujitsu Ltd. and announced in January Jasmine, an object-oriented database and development environment. Jasmine, scheduled for general availability "in the fall," is intended for the development of applications with graphics, animation, audio and video data. The company will provide hooks to link it directly to the CA/

Ingres relational database and gateways to connect to other relational and prerelational systems. A Jasmine developer's kit is on the market now.

- **Cincom Systems, Inc., Cincinnati.** This software company actually was way ahead of the big names in database. Cincom has been offering an object database based on UniSQL, Inc. software and promoting its relational-object database strategy for more than a year, although it was officially announced last December.

- **Sybase, Inc., Emeryville, Calif.** Sybase has no publicly announced strategy. The company has said it is committed to providing object extensions to its database management system.

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ToolBox: Image Editor



Busting loose

CONTINUED FROM PAGE 93

their customers come calling. Since the beginning of this year, players such as Oracle Corp., Informix Software, Inc., IBM and Computer Associates International, Inc., have announced or started shipping functions to handle more complex data types. The one notable exception is Sybase, Inc., which says it is committed to providing object extensions to the Sybase database but hasn't yet revealed any specific plans.

The upside to all these announcements is that users can at least get the lowdown on what their vendor's approach is to managing complex data types (see "Vendors tip their hands," page 93). Some companies, such as IBM, are extending existing database software to store and manage new data types. Others, such as Informix, have acquired object database technology and will use it to extend their relational database. Still others, such as CA, plan to offer a full-blown object database environment and provide hooks to relational systems.

More reasons to integrate

For years, companies have worked with object technology and found ways to incorporate nonrelational data types into their IS operations with dedicated systems, such as imaging or text-retrieval systems. The difference today, according to many observers, is there are more substantial business reasons to integrate these functions directly into the corporate database environment.

The most compelling business driver today is the Internet. Because so much of the information flying across the Internet is nonrelational, companies need databases that can store, retrieve and manage other data types, particularly documents, video and sound.

As a result, the big database firms are shipping tools to "Internet-enable" their software. This — among other things — would let users from a remote World Wide Web browser directly access the database. With this capability, companies can move from static Internet activity — essentially publishing company information — to an interactive environment of electronic commerce.

"There has to be a business reason before these technologies become interesting," says Yogesh Gupta, a senior vice president of product strategy at CA. "For relational, it was ad hoc queries. People are now making audio, video and graphics an integral part of their business. To do that, you need to have a database that supports these rich data types."

Booz Allen & Hamilton, Inc., a consulting firm in New York and an Oracle user, has been developing a worldwide knowledge database that its consultants can tap in to and use on consulting assignments. Aron Dutta, a principal and member of the knowledge team developing this database, says, "we have to handle more than relational data" because data exists in so many different formats.

The company manages separate subsystems from several vendors to manage various data sources such as documents. But the firm wants one integrated platform to manage all data types. It uses the relational database and Web Server components of Oracle's just-announced Universal Server. It will evaluate this platform for managing other data types as well, Dutta says.

Bryan Knox, president of Voice I/S, Inc., a customer-support software provider in Dallas, is beta-testing object extensions for IBM's DB2 so his company can integrate voice data into its DB2-based system.

"This swings the door wide open," Knox says. Voice I/S plans to sell new customer-support software that can handle relational, image and voice data. "Historically, voice-processing solutions didn't talk to relational databases," he says. His company had to build pointers in the DB2-based system to link it to images stored in flat files. By using the DB2 object extenders, the company will be able to provide application software that uses one database for different data types.

As an example, the customer-support application will

eventually store letters and documents such as contracts and related product information that are associated with customer accounts, Knox says.

Object of your desire

Object technology can stir up contentious technical debates — are users better off with pure object databases or with hybrid systems that meld relational and object functions? But according to industry consultants and IS managers, there is no clear right or wrong choice. Instead, companies need to make decisions based on their current database investments and predictions of how significant a role they expect objects to play.

Companies that are selecting a client/server database today have a good opportunity to evaluate the vendors' approaches to object management. But other companies may find that their investments in certain database products already are so pervasive that it may not be worth the time and expense to switch vendors solely on the issue of complex data type support.

One big concern among some users is that their vendors will focus on object technology at the expense of core issues such as reliability, integrity and performance (see "Speeds and feeds still top concerns" below). But the vendors insist that core issues remain a top priority. One example: In its grand rollout of Universal Server in February, Oracle also introduced a range of systems and tuning tools. One offering is Enterprise Manager, which includes software distribution and graphical-based database administration tools. ■

Cafasso is a freelance writer in Walpole, Mass.

Snippets

DB2/2

"IBM's new release of its database warhorse lives up to the promise of past versions. It takes great strength of purpose for a company to transform a lackluster product into a star with a single new release. It also takes courage to put a core product on the operating system of an arch rival."

— PC Magazine, March 26, 1996

Oracle7

"Oracle's \$399 Personal Oracle7 is an excellent relational DBMS for designing, prototyping, testing and demonstrating client/server database applications."

— Data Based Advisor, February 1996

Sybase System 11

"Sybase System 11 DBMS may enable the software vendor to regain market stability. The company's System 10 was fraught with bugs and poor performance, and its 3-year product cycle wreaked havoc on Sybase's finances. The new DBMS is fundamentally a quality product, though it still has some flaws, including the lack of record-level locking and no parallel data query features."

— VARbusiness, Jan. 1, 1996

Microsoft SQL Server

"The major improvements in SQL Server 6.0 are in the areas of administration and distributed databases. The new administration tools are more tightly integrated with the database server than in previous versions and make it easier to manage users, security and database performance."

— LAN Magazine, January 1996

THE BASICS STILL MATTER

Speeds and feeds still top concerns

Users may be getting ready to move beyond relational technology, but they don't expect to leave behind their traditional database concerns — management, reliability, scalability and performance.

In fact, when several IS managers were asked about their top database challenges today, none mentioned objects or the Internet. Instead, they say it's still the more mundane aspects of databases that occupy their time and cause them to lose sleep at night.

"There's a lot of merit" in discussing next-generation databases, "but let's face it, most people aren't even doing relational well yet," says Cary Serif, manager of applied technology at Huntington Bancshares, Inc. in Columbus, Ohio. Serif says his company is struggling with distributed database management and is still trying to determine how to best manage a mix of databases that contain both shared and unique data.

Diversified Pharmaceuticals Service, Inc., an IBM

DB2 shop in Minneapolis, shares a similar concern. Database administrator Scott McLeod is struggling with IBM propagation tools to keep multiple DB2 databases in sync. IBM tools are good, he says, but they could be made easier to use.

As far as the industry buzz on objects and the Internet is concerned, McLeod says: "It is pretty clear to me what the vendors think I want and what I want are two radically different things." McLeod says he has tested the DB2 Web connection tool because "I want to be able to use it when I have to. . . . But as it stands right now, we don't have any plans to move toward it."

Diane Brown, director of data systems at Anthem Blue Cross/Blue Shield in Indianapolis, is concentrating on building data warehouses by using the SAS Institute, Inc. platform and source data from IBM's DB2. Text and video data sounds appealing, Brown says, but she is more concerned about "the cleansing and mapping to allow different data to flow into my system."



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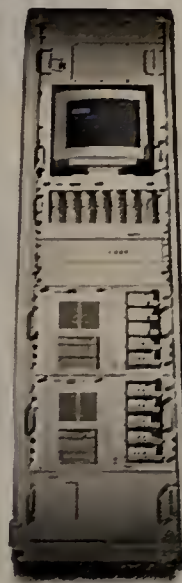
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Information and Process Integration Conference '96

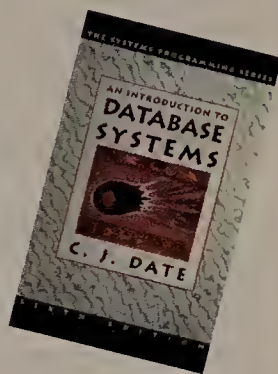
International Working Conference on Integration of Enterprise Information and Processes: "Rethinking Documents"

Nov. 15-16
MIT
Cambridge, Mass.
IPIC96@iti.gov.sg

Books

An Introduction to Database Systems
By C. J. Date,
Addison-Wesley Publishing Co., Reading, Mass., 1995,
839 pages.

An Introduction to Database Management Systems — An Insider's Guide to Architectures, Products and Design
By Robert M. Mattison,
McGraw-Hill, Inc., New York, 1993, 537 pages.



Newsgroups

comp.databases.gupta
comp.databases.inform
comp.databases.ingres
comp.databases.ms.sqlserver
comp.databases.rdb
comp.databases.sybase

OLAP offers fresh view of data

By Richard Creeth

On-line analytical processing (OLAP) has evolved rapidly since the software genre was first defined three years ago. Using OLAP tools against a database, financial analysts and sales and marketing professionals can quickly answer the following questions: What is my profitability by customer and product? What projected impact will cutting my prices by 5% have on my revenue and market share? Who are my Top 5 customers by region and channel?

There are two main reasons for OLAP's success: Users intuitively understand how to work with OLAP's multidimensional representations of their data; and OLAP provides a rapid application development environment.

Consider the two most common OLAP applications: financial reporting and analysis, and sales analysis.

Increasingly, financial analyses are expanding to include customers and products. Sales and product managers care about measures such as sales by region, product, customer, channel and time period. By presenting the data in an easy to assimilate tool — often a spreadsheet for the financial analyst and a multidimensional browser for the sales or product manager — the user is empowered by access to the data in a dynamic fashion. Users can work with data rather than just run static reports.

Because users can truly understand the data, many OLAP tools target end-user developers who can play a much larger role in the development of the OLAP system. As most information technology professionals will appreciate, the more users are involved with the design and development of the system, the more likely it is to succeed.

Because the term OLAP is hot, it is used to describe a wide range of applications. Don't assume that all OLAP tools are optimized to solve the same problems. There is

a lively debate between vendors who advocate that the data for analysis should be stored in a relational database and those who promote a database specifically optimized for multidimensional data. In reality, both approaches have merit, and because they address different problems, these vendors rarely compete head-to-head in the marketplace.

The relational route

Relational OLAP vendors typically address problems such as retail sales analysis in which the scalability of relational databases lets them deal with very large data volumes. The vendors with optimized multidimensional databases can perform complex analyses and multidimensional algebra. These tools prove powerful when solving complex financial analyses such as product or customer profitability. This almost religious debate has evolved into a propaganda war.

The information technology manager who chooses an OLAP solution today would be well-advised to concentrate on products that have a good track record in solving the type of problem he needs to solve.

There are more than 30 vendors who claim some sort of OLAP capability, and the number is growing rapidly.

OLAP can deliver solid business value and often leads to very happy users. Beware, however, of overreaching claims from some vendors. These are best avoided by talking to references who use the tool to solve the same business problem. Also, don't think that one OLAP tool solves all problems. Although there are some vendors who stress the breadth of their OLAP offerings, they all tend to be stronger in some application areas than others.

Creeth is president of Creeth, Richman & Associates, Inc., a financial systems consulting firm in Norwalk, Conn., that specializes in OLAP. He is co-author of "The OLAP Report," an independent research report.

SAMPLER

Leading database products and vendors
(Based on revenue estimates by International Data Corp.)

Oracle7
Oracle Corp.
Redwood Shores, Calif.
(800) 633-0596
<http://www.oracle.com>

SQL Server 11
SQL Anywhere
Sybase, Inc.
Emeryville, Calif.
(800) 792-2731
<http://www.sybase.com>

Informix Online
Informix Software, Inc.
Menlo Park, Calif.
(800) 331-1763
<http://www.informix.com>

CA-OpenIngres
Computer Associates International, Inc.

Islandia, N.Y.
(800) 225-5224
<http://www.cai.com>

Microsoft SQL Server
Microsoft Corp.
Redmond, Wash.
(800) 426-9400
<http://www.microsoft.com>

DB2/2
IBM
Armonk, N.Y.
(800) 426-3333
<http://www.ibm.com>

Progress RDBMS
Progress Software Corp.
Bedford, Mass.
(800) 477-6473
<http://www.progress.com>

Other DBMS vendors cited in this feature

SQL Base Server
Centura Software Corp.
Menlo Park, Calif.
(800) 876-3267

<http://www.gupta.com>

Supra Server
Total ORDB
Cincom Systems, Inc.
Cincinnati, Ohio
(800) 543-3010
<http://www.cincom.com>

The SAS System
SAS Institute, Inc.
Cary, N.C.
(919) 677-8000
<http://www.sas.com>

Examples of OLAP vendors
(Names provided by Creeth, Richman & Associates, Inc.)

Arbor Software Corp.
Sunnyvale, Calif.
(800) 858-1666
<http://www.arborsoft.com>

Kenan Systems Corp.
Cambridge, Mass.
(800) 775-3626
<http://www.kenan.com>

Pilot Software, Inc.
Cambridge, Mass.
(800) 944-0094
<http://www.pilotsw.com>

Planning Sciences, Inc.
Littleton, Colo.
(303) 794-8701

TM1 Software (formerly Sinper Corp.)
Warren, N.J.
(908) 755-9880
<http://www.tmi.com>

Microstrategy, Inc.
Vienna, Va.
(800) 927-1868
<http://www.strategy.com>

Information Advantage, Inc.
Edina, Minn.
(800) 959-7015
<http://www.infoadvan.com>

Platinum Technology, Inc.
Oakbrook Terrace, Ill.
(800) 378-7528
<http://www.platinum.com>

Brio Technology, Inc.
Mountain View, Calif.
(800) 879-2746
<http://www.brio.com>

Cognos Corp.
Burlington, Mass.
(800) 426-4667
<http://www.cognos.com>

Business Objects, Inc.
Cupertino, Calif.
(800) 705-1515
<http://www.businessobjects.com>

Dimensional Insight, Inc.
Burlington, Mass.
(617) 229-9111
<http://www.dimins.com>

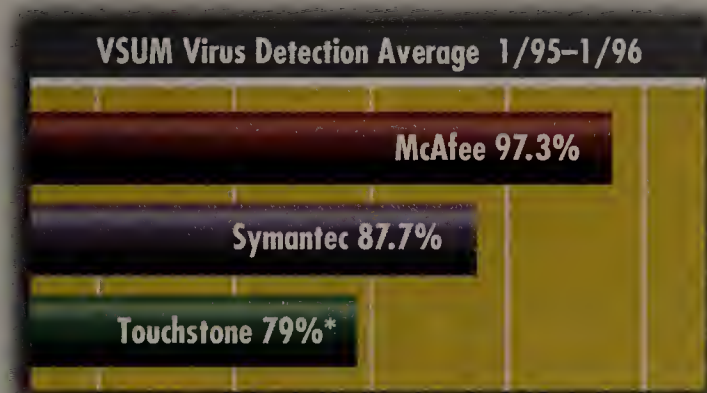
Holistic Systems, Inc.
Edison, N.J.
(908) 321-6500
<http://www.holossys.com>

Oracle Corp.
Informix Software, Inc.
(see addresses at left)

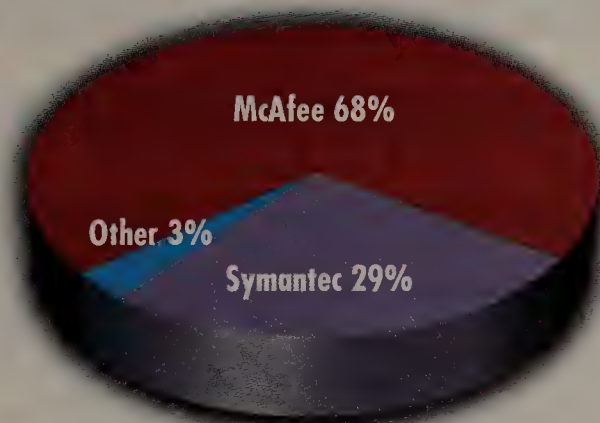
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DOS and Windows
Shipments - IDC, 1994

JUST SOMETHING TO THINK ABOUT BEFORE TRUSTING SYMANTEC.

"Symantec's little fib" - Information Week, 9/11/95

A lot of people disagree with Symantec's claim that they have the best virus protection. Even some Symantec people.

Vice President of Desktop Utilities, Ellen Taylor, said "we...regret any misconception..." that resulted from Symantec overstating its detection rate. *Information Week* described it as "Symantec's Little Fib."

The San Jose Mercury News added that "Symantec, with NCSA's urging, has acknowledged that it may have exaggerated a bit..."

Another Symantec ad misleads readers by comparing their desktop anti-virus product with McAfee's WebScan for the Internet.

Advertising aside, just how good is Symantec virus protection?

VSUM tests over the past year show that Symantec detected less than 88% of all viruses while McAfee VirusScan caught over 97%.



"Norton's chicken soup not as foolproof as advertised" - San Jose Mercury News, 9/15/95

Maybe that's why McAfee virus protection is trusted by over 10 million users. More than all others. And maybe that's why 80 of the Fortune 100 trust McAfee's products.

To find out for yourself, just download any fully-functioning McAfee product. There are no encryptions or time bombs. We trust you to pay us if you decide to keep it. After all, virus protection is a matter of trust.

And now that you have all the facts, we trust you'll decide on McAfee.

For more information on McAfee products, including our on-line technical support, call **1-888-VIRUS NO** toll free.



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Oracle soars ahead of the pack

Oracle 7.1 Enterprise Server

Oracle Corp.
Redwood Shores, Calif.
(800) 633-0596
<http://www.oracle.com>
(50 users)

DB2/2

IBM
Armonk, N.Y.
(800) 426-3333
<http://www.ibm.com>
(50 users)

SQL Server

Microsoft Corp.
Redmond, Wash.
(800) 426-9400
<http://www.microsoft.com>
(50 users)

SQL Server

Sybase, Inc.
Emeryville, Calif.
(800) 792-2731
<http://www.sybase.com>
(51 users)



By Kevin Burden

Oracle Corp.'s Oracle 7.1 Enterprise Server is making a deep impression on users, perhaps deeper than that of any of its competitors, *Computerworld's* latest user satisfaction survey says.

More than half of 50 Oracle 7.1 users (56%) surveyed characterized their overall satisfaction with the highest grade allowed: "A" for "very good." Oracle's nearest competitor, IBM's DB2/2, won As from 36% of its users. Microsoft Corp.'s SQL Server was third with 28%, and Sybase, Inc.'s SQL Server was last with 27%.

When surveying relational database management system users in the past, these leading vendors have always finished in a tight pack. So what's different this year? Foremost, it's Oracle's latest version, Oracle 7.1, which includes new features such as open gateways for improved interoperability. And users cited scalability as a plus, now that Oracle's Workgroup Server and Personal Oracle are in the mix.

But really hitting home was Oracle's stability, which was the reason users most often cited when asked why they chose Oracle. "In my 20 years of database experience, [Oracle 7.1] is by far the cleanest. It practically has no bugs," says Gary Roseberry, a database engineer at the Consortium for International Earth Science Information Network in Saginaw, Mich.

Computerworld contracted First Market Research Corp. in Austin, Texas, to survey 50 users of current versions of each of the four market leading server-based RDBMSs. The goal was to find out how well each package performed and which factors led users to choose it.

IBM DB2/2

Our past surveys show that IBM's DB2 family has enjoyed strong user support, and this year is no different. But IBM is a distant second to Oracle in the number of As for overall performance; IBM and Oracle are neck and neck if you consider the total number of As and Bs ("good") in all categories.

Users said compatibility was the primary reason they chose DB2/2, and operating system compatibility is foremost on their list. All DB2/2 users sur-

veyed were running IBM's AIX, and more than 90% gave operating system compatibility favorable grades.

DB2/2 is also available on several other Unix versions as well as OS/2, and it was recently was ported to Windows NT. Although our survey doesn't reflect DB2/2's performance on these platforms, comments from several users indicate the NT version worked well in their tests — even though it lacks the graphical tools of the AIX version.

Microsoft SQL Server

Despite some new features, Microsoft's SQL Server 6.0 remains architecturally similar to past versions. This means all applications are fully compatible, which helped Microsoft garner Bs for overall satisfaction from more than half its users surveyed.

"We upgraded because it was compatible with what we have now," says James Johnson, lead systems analyst at Williams International in Walled Lake, Mich. Johnson isn't alone: Compatibility with application software is the No. 1 reason users said they installed 6.0, which will soon be replaced by Version 6.5.

Application compatibility is further enhanced by Microsoft's SQL Server Distributed Management Objects architecture. The architecture has more than 600 OLE interfaces, meaning that any OLE-supported application can embed its controls into the SQL Server application.

Priced at \$999 per server and \$149 per client, Microsoft's SQL Server was the only RDBMS for which users listed price as a top motivator.

Sybase SQL Server

Sybase's SQL Server 10 didn't post the same positive scores it did in last year's review [CW, July 17]. This year, Sybase had the fewest number of users willing to give overall performance As and the most giving Cs ("average"). "We're more familiar with [System 10] now and know its

quirks a little better," says Lawrence Deberry, director of internal audit at Sun Diamond Growers of California in Pleasanton, Calif.

SQL Server 10 has numerous bugs, which users say have surfaced over time and have affected their view of the product's reliability. But Sybase's decision to pursue the International Standards Organization 9001 certification, a stringent quality-control process, may have returned some reliability and respect to System 11, which was made generally available after this survey was completed. Reliability was the second most frequently cited factor as to why users chose Sybase. And 70% of those who named reliability gave it favorable grades, compared with 56% last year.

Scalability is another area in which System 11 prerelease users noticed improvements. Sybase had encouraging news last October when it announced that System 11 achieved 5,621.07 transactions per minute/type C on a 12-way symmetrical multiprocessor HP 9000 Model T500 from Hewlett-Packard Co. "Performance and scalability were severe problems for us once. System 11 hasn't solved all our problems, but the system is not nearly as stressed as it was," says Barry Klutz, database administrator at NationsBanc Services, Inc. in Charlotte, N.C.

How would you grade your overall satisfaction?

	Very good	Good	Average
Oracle 7.1 Enterprise Server	56%	30%	12%
IBM DB2/2	36%	48%	12%
Microsoft SQL Server	28%	54%	14%
Sybase SQL Server	27%	55%	16%

(Percent of 50 users per product. A few users didn't offer an opinion or gave "poor" grades.)

Would you choose the same product again?

	Yes	No
Oracle 7.1 Enterprise Server	86%	2%
IBM DB2/2	74%	14%
Microsoft SQL Server	80%	14%
Sybase SQL Server	57%	25%

(Percent of 50 users per product. Remaining users were undecided.)

OnLine

Informix Software, Inc.
Menlo Park, Calif.
(800) 331-1763
<http://www.informix.com>
(28 users)

Only 28 Informix users, compared with 50 for the other DBMS products, responded to the survey. The majority rated their overall satisfaction with a B or C. Informix users were unique among those surveyed because they alone named parallel processing as a reason for their choice. OnLine's Parallel Data Query technology can speed up queries by performing scans, joins and sort tasks concurrently.

	Very good	Good	Average
Overall satisfaction	11%	46%	25%

Burden is *Computerworld's* senior researcher, Scorecard/Firing Line.



Six

In technology, there's a fine line
between news and history.



This is news.

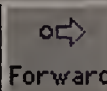
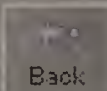


Let's face it. Everybody's worried that by the time they get a new computer, it's already old. That's why we're bringing you the latest technology sooner, so you can use it longer. Namely, Intel's hot-off-the-press 133 MHz Pentium® processor, now in two powerful AST® notebooks. The Ascentia™ P Series is packed with slick features like our SmartBay™, which houses a removable high-speed CD-ROM drive that you can swap with an extra battery or floppy drive. The Ascentia J Series is just as newsworthy, yet more affordable. Among other things, it boasts built-in 16-bit audio, integrated modem, and a Lithium Ion battery. And of course, they both offer the latest processor. So call 800-876-4AST for a reseller near you. Or check the net at: <http://www.ast.com>. After all, you deserve a notebook with a future.

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In Depth

flame /flām/ n, vt.: a heated, often insulting response to a Usenet post; to send an insulting post

the ENFORCERS



By Kim S. Nash

While Soren Ragsdale was away from his PC — at a 7-Eleven, in fact, buying a Big Gulp — the electronic thunderbolt struck.

Someone, and Ragsdale has his ideas about who, had forged an electronic-mail message in his name. The crass note promoted a bogus business that Ragsdale supposedly was starting. Then came the spam: The ne'er-do-well sent the E-mail to hundreds of Internet Usenet groups and thousands of users worldwide.

Thus began the torrent, says Ragsdale, a student at the University of Arizona in Tempe. Within hours, more than 40,000 angry responses poured into his Internet account at school. Ragsdale suspects the message that lit this wildfire was forged by Jeff "Spam King" Slaton, with whom Ragsdale has waged a lengthy flame war. (More on Slaton later.)

The Internet offers enormous possibilities to commit faux pas, misdemeanors and

**If they deem
your posts rude,
obnoxious or
criminal, there
are plenty of
people on the
'net who'll clue
you in or drum
you out. Are
they guardian
angels
or vigilantes?**

ⓧ Don't call her Miss Manners, but Arlene Rinaldi (above) advocates the polite-cough method of correcting 'net offenders.

even felonies. And due to its decentralized nature and free-spirited history, it has given the cold shoulder to formal policing. But nature hates a vacuum, and private volunteers have stepped in as enforcers. The question is, are they doing everybody a favor or compounding the problem?

The Internet's anonymity, combined with the few easy keystrokes required to spout off to millions of people at a time, can amount to never-ending disinformation, insults and annoyances. Worse, Internet bystanders are forced into the game simply by being there.

"The way the Internet works encourages people to fly off the handle ... and [to] keep sending words around and around and around the world," sighs Charles Hymes, a doctoral candidate in human/computer interaction at the University of Michigan in Ann Arbor. Hymes runs a World Wide Web site intended to "clue in the clueless" about widespread hoaxes.

Enforcers, page 104

ENFORCERS

CONTINUED FROM PAGE 103

Remember the one where an angry Neiman Marcus customer posted the retailer's recipe for gourmet cookies on-line? Hymes has seen the same foolery with Mrs. Field's, Pillsbury and Betty Crocker. "The first time I saw it, I baked the cookies. But the sixth or seventh time, I just got annoyed," says Hymes, who has used the Internet for 11 years.

The most recent urban legend was a message supposedly from an Internet-governing body. Users were urged to "unplug" their computers from the 'net so the network could be "cleaned." (Cleaning day was April Fools' Day.)

Jeff Slaton's antics, on the other hand, are more insidious. He has made a career of spamming Usenet for start-up companies that want to advertise on the Internet. Ragsdale hates Slaton and his spam and has created a Web site to let the world know it.

Whether the offender is malicious, criminal or just naive, it seems everyone wants to chew out the collective butt of the 'net obnoxious, and some are making a career

of doing so. That includes private individuals such as Hymes and Ragsdale, multinational companies, volunteer cyberpatrols and even the federal government.

cancel-bot ['kan(t)-sel-bät] n: a program posters can use to cancel their own messages; can be rigged to cancel other people's messages

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The humiliation approach

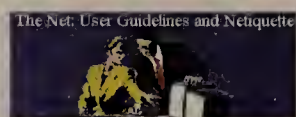
Some vigilantes act alone. Alex Boldt's philosophy is that if being polite won't stamp out 'net abuse, humiliation might.

Boldt's Blacklist of Internet Advertisers, for example, is a Web site that lists in big, bold letters the names and offenses of Internet abusers. Canter & Siegel, a law firm in Phoenix, inspired the mathematics doctoral candidate at the University of California at Santa Barbara to create the site. Canter & Siegel offended, even enraged, much of the Internet community in 1994 by spamming Usenet with ads for discount legal services to help immigrants get green cards. The lawyers were stormed by incensed flame mail, and the volume forced their Internet service provider to shut down.

Site seeing

Arlene Rinaldi's Netiquette

<http://www.fau.edu/rinaldi/netiquette.html>



Blacklist of Internet Advertisers

<http://www-math.uni-paderborn.de/~axel/BL/>

Brad Templeton's home page

<http://www.clarinet.com:80/brad/>

CyberAngels

<http://www.safesurf.com/cyberangels/>

Howard Rheingold's Brainstorms

<http://www.well.com/user/hlr>

PsyberNut's anti-CyberAngels page

<http://www.crl.com/~lsm/cyberangels.html>

Charles Hymes' Don't Spread that Hoax!

<http://www.crew.umich.edu/~chymes/newusers/Think.html>

Telecommunications Deregulation and Reform law

<http://www.technologylaw.com/techlaw/act.html>

The polite approach

Rinaldi believes every communications technology needs a protocol. She advocates the polite-cough method to cure 'net ills. She might send a gen-

tle notice to an offender about a transgression and suggest an alternative means of expression.

If someone, say, uses all capital letters in a Usenet post, Rinaldi will explain sweetly that all-cap missives are a no-no. THEY MAKE THE POSTER LOOK LIKE A RAVING LOON. Harsher reprimands and personal attacks via flame mail "make a point, but they can affect people who are innocent," she says.

Despite her light touch, Rinaldi hates being called the Emily Post of the Internet. "I would never call what I do 'enforcing rules,'" she says. "That would negate the free-speech nature of the Internet."

But that's just it, critics contend. The Internet has become too wild a place — frequented too often by scofflaws — to be tamed by love-thy-neighborists. When on-line conversations get reactionary and ugly, so do the tactics used to combat them.

Velveeta [vel-'vee-tə] n: many copies of the same or similar message posted to several unrelated newsgroups. SYN see SPAM

"This is good because it shows me they don't appreciate being blacklisted," he adds.

But Internet discourse isn't completely grim, according to Hymes at the University of Michigan. "I haven't seen any death threats in a while," he says. "Probably because people are aware that there are FBI agents out there watching."

If the Federal Bureau of Investigation isn't, then a group of amateur law enforcers certainly is.

CyberAngels is an electronic offshoot of the famous street-patrolling Guardian Angels. The group seeks volunteers to stalk the 'net for scenes of wrongdoing, including suspected theft or fraud by businesses or harassment of individuals. Volunteers then report alleged crimes to CyberAngel officers or more formal law enforcement officials.

The all-out-war approach

Ragsdale and Slaton are poster children for this method. Slaton, for example, has talked about suing the Internet service provider that hosts Ragsdale's anti-spam and anti-Slaton opinions, Ragsdale says. The Spam King couldn't be reached for comment. He regularly changes his E-mail address and telephone number to stay ahead of a rabid pack of Slaton-haters.

Most 'netters don't expect the trouble to die down. "The reason Jeff Slaton isn't going away is the same reason you don't have slimy lawyers going away: There will always be people with no morals who think they can make money," Hymes says.

Speaking of lawyers, most upsetting to Internet users is

the unceremonious appearance of the federal government on electronic turf. For Internet purists, the prospect of having politicians filter information is frightening.

"We very definitely do not need the U.S. Congress telling us how to use the Internet," says Howard Rheingold, the San Francisco-based author of *The Virtual Community*.

Rheingold says education is the key. The 'net "has norms, not rules. It depends on people to pass those norms along, [but] the rate of growth [in the number of users] has made that impossible." Rheingold chalks up the current tumult to growing pains and expects on-line life to regain composure "after the fadism wears off."

But others, such as Brad Templeton, want to ensure that the Internet remains relatively free of formal laws.

An Internet veteran of 17 years, Templeton is one of several plaintiffs in a suit against the U.S. government to stop the Exon-Coats Communications Decency Act. Part of the Telecommunications Deregulation and Reform law signed in February, the act prohibits obscene and violent materials on-line.

Initial testimony in the case began late last month in the U.S. District Court for the Eastern District of Pennsylvania in Philadelphia; free-speech advocates completed their arguments two weeks ago. Until the case is decided, the government is restrained from enforcing the decency clause.

"If you give people the power to get rid of troublemakers, you give them power to get rid of people they just don't like," Templeton says. He publishes *Clarinet*, a 7-year-old on-line newspaper from ClariNet Communication Corp. in San Jose, Calif.

Templeton spends most of his free time on-line and doesn't want to see his playground obliterated.

"The 'net has been an overriding drive in my life for 15 years," he says. "Around here, people travel and hike. I do a lot of computer stuff."

A radio-frequency modem in a notebook

Spam n, vt: many copies of the same or similar message posted to several related newsgroups; to post the same message to multiple groups

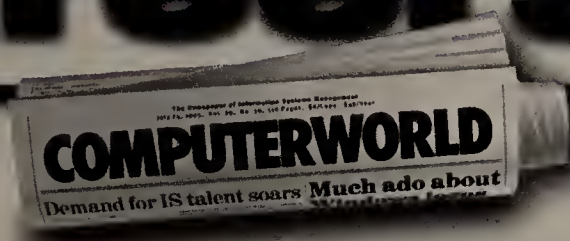
computer lets Templeton log on when he's in the car.

"I've been known to send E-mail from my doctor's waiting room," he says with a laugh. Templeton, like 'net enforcers of all types, remains hopeful that he can make the 'net a better place.

Nash is *Computerworld*'s senior editor, Internet.

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Computer Careers

The trainers' trade: learning anew

Limited budgets and unlimited technology changes are forcing new roles on IS trainers

By Melanie Menagh

Last year, when our graduates were interviewing, things were crazy around here," says Allison Rossett, a professor of educational technology at San Diego

State University. Rossett teaches future information technology trainers.

"In December, it was like baseball free agency — companies wanted all our people. There were more job opportunities than candidates. A prominent company that recently hired one of our graduates called and said, 'Send us another one just like him.'"

The information systems training industry is expected to grow exponentially through the end of the century — but these days it's in flux. Many people think internal staff numbers have flattened out, and outsourcing will rule the future.

"Companies are watching to see if they can hold their own with training staff because going out is very costly," says John Lewis, chairman of the Department of Humanities, Social Sciences and Biometrics at Hahnemann University in Philadelphia.

The new school

Donna Coombs, director of education services at Aris Corp., an information technology training consultancy in Seattle, argues that rapidly changing technology often is the determining factor in the outsourcing equation.

"You're probably never going to be able to find all the emerging [information technology] skills needed in a few people. You'd have to maintain a pretty large training staff to stay on top of everything," Coombs says.

The business is changing in other ways.

Trainers are expected to use new teaching tools, and they can take their skill sets in new directions, according to Herb Bivens, a senior performance technologist at

AT&T Corp.'s Lucent Technologies Center in Cincinnati. Job opportunities and demands for trainers can vary, depending on whether you're on staff or a hired gun.

Consultants have to be comfortable in many different teaching situations. "External people

are going to be exposed to a breadth of teaching and situational solution environments," says Marsha Kabakov, group manager of the Worldwide Education Channel program at Microsoft Corp. In-house trainers face different challenges. "You know what your audience is looking for week after week. But, on the other hand, you have to consider the long-term business implications," Kabakov says.

"Internal people are now more training coordinators," Coombs says. "They decide what education is necessary in [information technology] and either provide it themselves or advise management on where to find it, then work with the consultants."

It's crucial for information technology trainers to keep abreast of current and emerging technologies. But that's easier said than done for internal people who are busy with long- and short-term business goals and for external trainers who spend a lot of time traveling.

"You've gotta read the periodicals," Lewis says. "Focus on two specific publications rather than roaming across the spectrum. And try to attend one seminar a year and present at another — when you're speaking, you really have to know what you're doing. This helps you build a network and find out about new products."

Coombs says there are many rewards. The job is great "for people who like to be on stage and have the opportunity to express themselves. You get a lot of kudos, you're appreciated. Seeing people learn and

enjoying learning makes you feel good."

Menagh is a freelance writer in Brooklyn, N.Y.



"Larger companies are using internal trainers less. It's more of a technical than a financial consideration."

Donna Coombs,
director of education
services, Aris



"You have to be adept at discovering what information technologies are out there — how they're going to enhance learning."

Herb Bivens,
senior performance
technologist, AT&T

Big recruiter on campus

To snare the best and the brightest college talent, lure them with tales of exciting work and technological challenges

That is the conclusion of a recent survey of IS students by Brecker & Merryman, which looked at the most effective recruiting strategies at leading technology schools. The Recruiting Computer Technology Graduates survey asked 90 graduating IS seniors to rank the importance of recruiting practices, interviewing, employer selection, recruiting materials, career expectations and preferred work environments.

The survey found that "an overriding consideration for computer technology graduates is the chance to grow professionally and learn new skills," says Andy Szpekman, director of research at Brecker & Merryman in New York, a human resources consulting firm. "Consequently, recruiters must demonstrate what is unique about their company's opportunities and how such differences enable professionals to build a diverse portfolio of skills and knowledge."

The survey revealed the following:

■ **57% of IS graduates rely on word-of-mouth referrals when deciding whether to interview with a company on campus.**

■ **55% of IS graduates consider campus interviewers and company presentations the most critical factors in campus recruiting.**

■ **49% of IS graduates say they expect to stay four years or more with their first employer.**

.....
Information technology graduates most often cited the following reasons for choosing an employer:

Job content/challenge — 47%

Company personality/culture — 42%

Compensation/benefits — 36%

Advancement opportunities — 31%

Company location(s) — 30%

Source: Brecker & Merryman, Inc. New York, (212) 490-1600.

MADE TO ORDER

**Manufacturing
company managers
reveal their ideal
IS job candidates**

By Steve Alexander

The Gillette Co. in Boston is falling 20% short of its information systems hiring goals. And it isn't alone.

Manufacturing companies nationwide are hurting for talent big time as they migrate to client/server computing. The greatest hiring needs are in open systems, client/server technologies and some skills specific to the manufacturing industry. These include integrated manufacturing and financial software from SAP America, Inc. and Oracle Corp.

The hiring shortage is driving up salaries and forcing many companies to hire contractors while they search for full-time employees. And many companies have been forced to delay IS projects for lack of talent.

For IS professionals looking to cash in, IS managers at leading consumer goods manufacturing companies offer their views on what skill areas are the best tickets to success. ■

Alexander is a freelance writer in Edina, Minn.



WANTED: 15 GOOD PEOPLE

RANDY ALLEN
Chief administrative and
information officer
Phillips-Van Heusen Corp.
New York

Allen has had a tough time hiring IS people for the New York clothing manufacturer. "There's a lot of competition for good people," she says.

Phillips-Van Heusen, which has an IS staff of 175, is seeking programmer analysts, business analysts, database specialists and people with PC skills for its AS/400- and Unix-based systems, Allen says. "We hired 15 people in 1995, and we have another 15 positions open."



SKILLS SHORTAGE IN CLIENT/SERVER...

PATRICK ZILVITIS
Vice president of corporate
information technology
Gillette Co.
Boston

Gillette has shifted about 75% of its IS operations to a client/server architecture in the past five years. In the process, the company has had particular difficulty finding the LAN technical support people and managers needed for Unix-based client/server systems. As a result, it has focused on retraining mainframe staff in client/server skills.

"I would not say there is a shortage of people. There is a shortage of certain types of skills," Zilvitis says.



MAINFRAME PROS NEEDED

EDWARD WOJCIECHOWSKI
Vice president of information
technology
Maytag Corp.
Newton, Iowa

Manufacturing companies still use mainframes to a large extent. But Wojciechowski says the emphasis on client/server makes it difficult to hire the mainframe and mid-range talent he needs.

Maytag, which has a 300-employee IS department, is seeking a variety of talents, including mainframe programmers, PC application developers and AS/400 programmers. The company has delayed IS projects for lack of the right people or a sufficient number of people.

"There's been a lot of hype about client/server, and obviously that's where people want to go and work. But there are ample opportunities in the mainframe and mid-range host processor arenas that are rewarding," Wojciechowski says.



... BOOSTS SALARIES IN IS

EDMUND TOBEN
Vice president of IS
Colgate-Palmolive Co.
New York

Colgate-Palmolive plans to shift most of its operations from IBM mainframes and Digital Equipment Corp. minicomputers to client/server systems by the end of the year.

But the shortage of client/server and Unix talent has driven IS salaries up by 5% to 10%, according to Toben. His 200-employee IS department hired about 25 people last year. Toben is supplementing new hires by retraining staff in client/server, Unix and SAP manufacturing software technologies.

Toben says he believes the hiring shortages will ease. "What we're seeing is the classic story: There is new technology and therefore not as many people with experience. In the next 12 months, it will get better as more people become experienced."

CALENDAR

**Conferences and events of interest
for information systems career de-
velopment**

RECRUITING

**Performance Measurements for
Recruiting & Staffing**

May 8-10

Hyatt Regency, Chicago

May 22-24

Double Tree Paradise Valley
Resort, Scottsdale, Ariz.

Focus is on general recruitment issues. Information will be presented on effective recruiting practices, performance measurement, measuring cost-per-hire, just-in-time recruiting and client expectations. Price: \$1,195 at either location; workshops additional. Contact: International Quality & Productivity Center, Little Falls, N.J.

(800) 882-8684. E-mail:
info@iqpc.com.

SUPPORT SERVICES Systems Support Expo

May 15-16

World Trade Center, Boston

Focus is on service and support for desktop computing, computer training and help desks. Keynote speaker John Rando will discuss the impact of the Internet on support services and support-service professionals.

Contact: Susan Foden, Systems Support Expo, Yarmouth, Maine (207) 846-0600, ext. 262.

TRAINING

**Assessment, Measurement and
Evaluation of Human Performance
Conference & Exposition**

May 5-8

Marriott Copley Place, Boston

This conference is targeted at general training issues, but IS trainers also may find a wealth of valuable information. Sessions will focus on technology tools for training, the role of the Internet in training, team building and evaluations, linking training to business needs and soft skills training.

Price: \$995 for two-day conference; seminars additional. Contact: The AME Conference, Lexington, Mass. (617) 862-2355

Interactive '96 Conference & Expo

May 12-15

Georgia World Congress Center

Atlanta

The latest in multimedia technologies is at the heart of this confer-

ence. Sessions will focus on tools and design methodologies, the use of Internet technology, multimedia in the classroom, distance learning, multimedia training and on-line documentation and help. Price: \$895. Contact: Softbank Institute, Medford, Mass. (800) 348-7246.

Strategies for Success

June 6-8

The Inverness Hotel & Conference Center, Denver

Attendees of the 1996 Corporate Technical Recruiting Conference being held June 2-5 at the Inverness may want to stay for a few more days to take advantage of this IS training "summer camp." The June 2-5 conference sponsored by Coni-

puterworld focuses on technical recruiting. The summer camp sponsored by the Information Technology Training Association (ITTA) focuses on technical training. Price: \$1,095 for ITTA members. Contact: ITTA, Austin, Texas, (512) 502-9300. E-mail: sfs@itta.org.

PROJECT MANAGEMENT

Projectworld

Aug. 5-8

Omni Shoreham Hotel, Washington

A valuable conference for IS project managers and leaders. Sessions cover a variety of technology related and general topics. Will also be held Dec. 11-13 in Santa Clara, Calif. Contact: Projectworld Inc., Waltham, Mass. (617) 431-9737 or (888) 943-4444.

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Greenville, SC company looking for software developers with good academic background to work on 4GL and C++ platforms for Windows apps and client/server development on Windows, C++, Oracle, and Microsoft SQL Server. Requires MS Computer Science and ability to demonstrate masters degree level knowledge in Language Theory, Computer Architecture, DataBase Theory, Algorithms, Operating System Theory, Computational Theory, and OOP theory. \$45K. Apply by resume to Recruitment Director, PO Box 17934, Greenville, SC 29606.

Full time Systems Analyst responsible for system analysis, design, coding, implementation and maintenance support required for network analyzer product. Must have Bachelor's degree in computer science and at least two years experience in the field required. Educational or work background must have included use of Unix Sockets, C, C++, SOL, MS Windows. Employer will accept a Master's degree in computer science in lieu of stated education and experience. Annual salary is \$41,000.00. Must have proof of legal authority to work in the United States. If interested, please submit a resume to: Georgia Department of Labor, Job Order # GA 5950584, 2943 N. Druid Hills Rd., Atlanta, GA 30329-3909, or the nearest Department of Labor Field Service Office.

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Law School Admission Council (LSAC) is seeking an individual to be responsible for the configuration, administration, and installation of all UNIX systems. Responsibilities will also include implementing/maintaining the computing environment; working with database administrator to monitor/enhance performance of the production and development environment; and developing access security for the physical system. You will also develop capacity and systems requirements/plans; monitor system performance; and work with Information Systems Group (ISG) staff to optimize system performance.

Candidates should have 3 years experience with UNIX and UNIX shell programming along with a thorough understanding of various application and performance/capacity products in a multiple platform environment. Exposure to ORACLE would be a significant asset.

To apply please fax/forward your resume and letter of application to **C. Rommel, Human Resources Office, P.O. Box 40, Newtown, PA 18940. FAX (215) 968-1169.** The application deadline is May 3, 1996.



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Opportunities in Colorado Springs, CO available for individuals with experience on IBM Mainframe and Mid-Range to PC Platforms. Technology includes C, C++, OOD, COBOL, UNIX, OS/2, VMS, MVS, DB2, ORACLE, RDB, TOKEN RING, ETHERNET, TCP/IP, Multi-Threaded programming, etc. Positions include:

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Disaster Recovery Coordinator

You will be responsible for all aspects of Disaster Recovery and Contingency planning for multiple computer platforms, including network communications. This will include negotiating contracts with recovery vendors, coordinating tests and facilitating business recovery plans and procedures. A Bachelor's degree is required; 3-5 years' experience and PC knowledge a plus. Familiarity with mainframe, mid-range and LAN servers is desired. Certified Disaster Planner or Associate Disaster Recovery Planner accreditation preferred. **Req. #96A1470-CW**

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Fax: 201-398-6102 or Email: hr@logos-usa.com.
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Systems Analyst. \$1,000.00 per week. 8:00 a.m. to 5:00 p.m.; 40 hours per week. Position available for Systems Analyst to analyze, design, and develop order entry and processing system using object oriented analysis and design method, OBA and BOOCH in Client/Server environment; to design and develop graphical user interface and generate reports using C, C++, Visual Works, XWindows, MOTIF, SUN SPARC, UNIX, ORACLE, HP and RS6000. Must have Bachelors Degree in Electronics, Electrical, Computer Science or Engineering. Must have 2 years training in job offered. Required two years experience must be in designing and developing applications using C, C++, OBA, BOOCH, Client/Server, VisualWorks, XWindows, MOTIF, SUN SPARC, UNIX, ORACLE, HP and RS6000. Job opportunity located in Atlanta, Georgia. Applicant should send resume to: Georgia Department of Labor, Job Order # GA 5961475, 2943 N. Druid Hills Road, Atlanta, GA 30329-3909 or the nearest Department of Labor Field Service Office. Must have proof of legal authority to work permanently in US. EEO/AA Employer.

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Sybase DBAs - 1-2 years experience in UNIX. Strong shell script writing a must. VAX/VMS (DCL knowledge) experience a plus.

System Administrators - 2-3 years Open VMS experience with Strong DCL required. ALPHA systems knowledge a definite plus. Self motivation is important.

System Administrations Managers - 5-7 years management experience in System Administration. UNIX, Open VMS and PC (2-3 years required) knowledge required. Manage 5-7 Admins in project scheduling, design & problem resolution. Good Communication skills preferred.

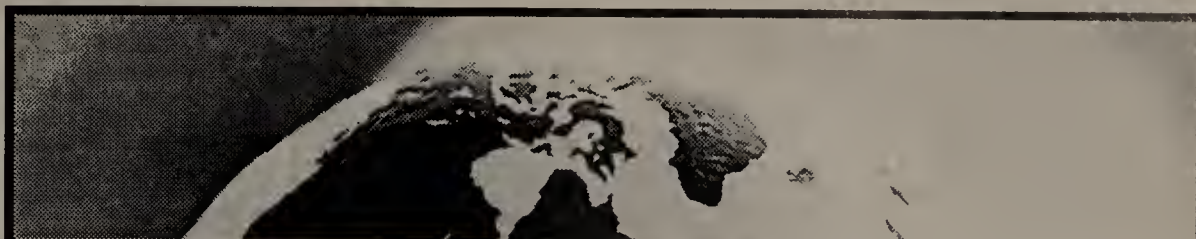
Network Analyst - 2-4 years experience in LAN Networking. Design, implement and trouble shoot in a national enterprise network. Experience in cabling, hubs, and routers are important.

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Network Architecture: Requires strong large scale LAN architectural experience with Windows NT™ Server, Windows® for Workgroups, LAN Manager or other advanced network OS. Knowledge of Systems Management Server, TCP/IP, gateways, bridges, routers, network diagnostic tools, mail/messaging systems, RDBMS and GUI application development preferred.

Windows Application Development: Requires strong Windows/Windows NT development experience using C/SDK, C++, Visual C++™/MFC and/or Visual Basic®, and demonstrated GUI application, design and development experience. RDBMS and/or LAN design/implementation preferred.

Messaging Architecture: Requires demonstrated experience in the design/implementation of large mail/messaging systems; multi-platform integration; and strong knowledge of Microsoft Mail/Exchange or other advanced mail/messaging systems. Experience with LAN architecture, messaging/standards/protocols/gateways such as X.400, X.500 and/or SMTP, MAPI and RDBMS design and development preferred.

Database Development: Requires significant logical and physical design experience with SQL Server™/other advanced RDBMS. Knowledge of database performance tuning, OLE, ODBC, network architecture and GUI application development preferred.

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Computer Programmer. Convert data from project specifications and statements of problems and procedures to create or modify computer programs for a wide variety of business and organization clients. Consult with client's technical managers and systems analysts to clarify program intent, indicate problems, suggest changes and perform requirements analysis in order to translate client's requirements into systems requirements. Develop client programs and routines; consolidate segments of programs into complete sequence of terms and symbols; breaks down program and input data for successive computer passes based on storage capacity and speed, extent of peripheral equipment and intended use of output data. Compiles documentation of client program development and subsequent revisions. In designing systems to address client's needs utilizing following computer based methodologies: IBM 3090, Vax/3400, MicroVax II, Sun Workstations, IBM RS/6000, IBM PS/2, MVS/XA, Vax/VMS, IBM AIX, Unix, MS DOS, OS/2, Cics, DB/2, OMF, Sybase, IMS DB/DC, Vsam, TSO/ISPF, Method/1, Design/1, IBM/370 Assembler, React, Pathvu, Retrofit, File Aid, Datatec, Vax/DCL, Vax/Pascal, Via Renaissance, Lex, Yacc, Netwise/RPCEXEC, Netwise/Rpctool, MVS/JCL, MVS/Utilities, VS/Cobol, Cobol/370, C/370 and C. Specify in detail logical and/or mathematical operations to be performed. Trains in-house MIS technical staff of client in program use. Develop and implement communication path between the old legacy applications and new architecture client-server system. Requirements: Two years experience as a Systems Analyst or Computer Programmer. Related experience must include two years experience in developing business systems applications utilizing the following hardware and software: IBM3090, IBM PS/2, Vsam, Pathvu, Retrofit, React, Unix, DB/2, VAX/VMS, TSO/ISPF, IBM 370 Assembler, CICS, VS Cobol, Datatec, FileAide and MS DOS. 40 Hr./Wk. 8:30 a.m. to 5:00 p.m., \$40,000/year. Must have proof of legal authority to work permanently in the U.S. Send two copies of resume to Illinois Department of Employment Security, 401 S. State Street, 3 South, Chicago, Illinois 60605, Attn. Shella Lindsey, Ref. V-IL-13691-L. No calls. An employer paid ad.

Consultant, 40hrs/wk., 9am - 5pm, \$49,920/yr. Design, develop, implement & test software for management information systems using client/server & object-oriented techniques. Write & test routines & modules. Database application development. Tools: ORACLE; Sybase; Powerbuilder; Pro*C; SQL; ESOL; C; C++; UNIX; DOS; MVS; AIX; VSAM; JCL; Lex; Yacc; DBX; MS-Access; Shell script. M.S. in Computer Science or Systems Science as well as six months experience in job offered or as Programmer Analyst required. Previous experience must include: ORACLE; SOL; ESOL; Pro*C; C; C++; UNIX; Powerbuilder. Must have proof of legal authority to work permanently in the U.S. Send resume to: Jill Bakke, SEI Information Technology, 212 E. Ohio St., Chicago, IL 60611, (312) 440-8375.

Programmer/Analyst (Will travel between Boca Raton and Miami, FL client sites) Responsible for program development, systems conversion, software installation, maintenance and support of AS/400 systems. Bachelors Degree in Comp. Sci., Engin., or Math + 1 1/2 yrs. exp. in job. \$37,000/yr, 40 hrs/wk, 8:30 a.m. - 5 p.m. Send resume to Job Service of Florida, 2450 West Oakland Park Blvd., Ft. Lauderdale, FL 33311-1347. Ref: JO# FL-141467

Software Engineer (Micro) - Multiple Openings - Structured systems analysis, design, development, testing, quality assurance, implementation, integration, maintenance and support of integrated client-server based systems for business, financial, banking, manufacturing and other commercial business application systems in a multi-hardware/multi-software environment using centralized or distributed relational database management systems, 4GLs and other GUI (Graphical User Interface) front-end tools. Analysis, design and development of client-server applications using object-oriented methodology. B.S. in Computer Science/Engineering/Science (or equivalent) and 2 yrs experience in job offered or as Programmer Analyst/Systems Analyst are required. Must have appropriate combination of skills as follows: 1 of A and 2 of B; or 2 of A and 1 of B; or 3 of A. A includes Oracle, Sybase, Informix, Progress, Ingres and B includes PowerBuilder, Visual Basic, MS-Windows, Visual C++, JAM, APT-SQL, SQL* FORMS, ESOL/C, GUPTA SQL, Progress 4GL, Informix 4GL, Ingres 4GL. High mobility preferred. 40 hrs/week, 8 am - 5 pm. \$49,000 - \$60,000 per year. Qualified applicants should contact or send resume to Mr. James Mackin, Manager, Office of Employment Security, 120 Merchant St., Ambridge, PA 15008. Refer to Job Order #8008759.

Consultant, 40hrs/wk., 9am - 5pm, \$48,000/yr. Design, development, implementation & programming of software for business applications. Projects include: document preparation for migrating systems from mainframe to Novell server; business processing system development/enhancement, including inventory tracking, payroll, labor analysis, & cash management; NLS Tool enhancement; design & development of IniTool for development group. Database class library development. Testing & technical support. Object-oriented programming, design & analysis. Additional tools: MS Windows; Smalltalk; Crystal Reports; Graphical User Interface (GUI); C; Visual C++; X-Windows; Motif; Sybase; SOL Server; Watcom. M.S. in Computer Science as well as 3 months experience in job offered or as Intern/Programmer required. Previous experience must include: database class library development using C++; development of a migration utility; SOL Server. Graduate education must include: one course on distributed computing systems as well as one project on GUI design. Must have proof of legal authority to work permanently in the U.S. Send two copies of cover letter & resume to: ILLINOIS DEPARTMENT OF EMPLOYMENT SECURITY, 401 South State Street - 3 South, Chicago, IL 60605, Attention: Janet Aschenbrenner, Reference #V-IL-15020-A. NO CALLS. An Employer Paid Ad.

SENIOR ANALYST PROGRAMMER required. Design, coding & debugging of GUI MS-Windows based applications using Object Oriented design techniques, Visual Basic, Microsoft Foundation Classes & Windows SDK. Extensive work with Object Linking & Embedding techniques. Develop Client/Server communication solutions using TCP/IP & IPX, maintain software version control & administer databases in both Oracle RDBMS & Novell's Btrieve Record Manager. Bachelor's degree or its equivalent required in Math, Computers or Engineering, plus 2 years experience in the job duties described above. University level project work may be used to satisfy the experience requirements. Must have proof of legal authority to work in the U.S. Salary - \$40,000/year for a 40-hour work week. Interested applicants send resume to the Oklahoma State Employment Service, 3105 E. Skelly Drive, Room 215, Tulsa, OK 74105 (ID#7201). Refer to Job Order #210354. Ad paid by an Equal Opportunity Employer.

Software Engineer, 40 hrs/wk, 9am-5pm, \$40,250/yr. Development & programming of software applications. Create & support National Language Version development environments for BPCS software line. Technical support including requirements analysis, system design, implementation, programming, testing & maintenance. Design & implementation of programs/tools to improve product development cycle times. Tools: SBCS and DBCS operating systems; AS/400; UNIX; RS/6000; HP/9000; RPG/400; CL/400; SOL/400; OQUERY/400; C; C++; BPCS; AS/SET; Probe/Abstract; TTT/400; DCU; Flashpoint; Robo-Help. B.S. in Computer Science as well as 1 yr exp in job offered or as Technical Consultant/Programmer required. Previous experience must include: BPCS; AS/SET CASE Tool; AS/400; RPG/400; CL/400; SOL/400; OQUERY/400. Must have proof of legal authority to work permanently in the U.S. Send two copies of resume and cover letter to: ILLINOIS DEPARTMENT OF EMPLOYMENT SECURITY, 401 South State Street - 3 South, Chicago, IL 60605, Attention: Shella Lindsey, Reference #V-IL-14754-L. NO CALLS. An Employer Paid Ad.

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Consultant, 40 hrs/wk, 9am-5pm, \$45,646/yr. Design, develop, implement & test software applications for telecommunications using client/server & object-oriented techniques. Code implementation, integration & unit testing. Database management. Tools: ESOL; DAS; X-Windows; Informix; UNIX; MS-Windows; C/C++; awk, sed; PERL; yacc; lex; TCP/IP; Neuron Data; UIMX; Visual C++. M.S.* in Computer Science as well as 6 mos exp in job offered or as Research Assistant required. (*Completion of all coursework acceptable in lieu of M.S.) Previous exp must include: database management; Informix; SOL. Graduate education must include: Applied Graph Theory; one project each on: object-oriented techniques with Rogue Wave libraries; C++; Motif. Send resume to: Job Service of Florida, 2312 Gulf-to-Bay Blvd., P.O. Box C, Clearwater, FL 34618-4090, RE: Job order #FL-1408899.

Database Administrator, 40hrs/wk., 9am - 5pm, \$48,000/yr. Ingres database support; software development to enhance, modify & add applications; configuration management; technical support. Tools: Ingres Net & ABF; ABF 4GL; Windows; C/UNIX; Ingerpl; Reportwriter (RW); Vifred; ISOL; IPM; Logstat; Lockstate. B.S. in Computer Science or Electrical Engineering as well as two years experience in job offered required. Must have proof of legal authority to work permanently in the U.S. Send two copies of cover letter & resume to: ILLINOIS DEPARTMENT OF EMPLOYMENT SECURITY, 401 South State Street - 3 South, Chicago, IL 60605, Attention: Joan Sykstus, Reference #V-IL-14780-S. NO CALLS. An Employer Paid Ad.

Unix Systems Administrator - Atlanta, GA. To install and maintain Unix systems (Sun, HP) and networks at client sites. Develop and maintain unix system administration software such as shell scripts and C/C++ programs. Install and test new firmware and software. Train technical personnel. Plan expansion and optimization of networks. Make recommendations for new technology purchases. M-F 8:30-5:30 40 hrs/wk. \$55,000/year. Require MS in Electrical Engineering, Computer Science or equiv. degree and two years exp. in the job offered or two years exp as a Programmer, Software Engineer, Systems Analyst or equivalent. Experience must include UNIX systems administration, writing scripts for UNIX shells, programming in C, TCP/IP networking, firmware modification of servers, and training technical personnel such as engineers. 100% (employer-paid) travel within U.S. possible. Send resume or apply in person to Georgia Department of Labor, Job Order #GA 5960137, 2943 N. Orid Hills Road, Atlanta GA 30329-3909 or the nearest Department of Labor Field Services Office.

System Designer/Developer, 40hrs/wk., 9am - 5pm, \$42,000/yr. Design & develop large, complex computer systems on mainframe computers & client/server systems using advanced design techniques, 4GL & DBMS. GUI front-end development. Additional tools: C++; Smalltalk. M.S. in Computer Science as well as one year experience in job offered or as Application Programmer Developer required. Previous experience must include: GUI design & development; system conversion; object-oriented programming & design. Education must include Numerical Analysis. Must have proof of legal authority to work permanently in the U.S. Send two copies of cover letter & resume to: ILLINOIS DEPARTMENT OF EMPLOYMENT SECURITY, 401 South State Street - 3 South, Chicago, IL 60605, Attention: Joan Sykstus, Reference #V-IL-14781-S. NO CALLS. An Employer Paid Ad.

Software Engineer, 40hrs/wk., 9am - 5pm, \$50,000/yr. Design, develop, implement & test software for management information systems using client/server technology & object-oriented techniques. Tools: SQL Windows; Delphi; Powerbuilder; C++; ORACLE; Visual Basic. M.S. in Computer Science as well as 6 months experience in job offered or as Programmer/Systems Analyst required. Previous experience must include: SOL Windows; Powerbuilder; C++; ORACLE; Visual Basic. Must have proof of legal authority to work permanently in the U.S. Send resume to: Tyler McFarland, Dunn Systems, Inc., 4301 W. Touhy Avenue, Lincolnwood, IL 60066, (647) 673-0300.

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PROGRAMMER ANALYST (2 openings) (Ref: 48596) to plan, develop, test & document comp. programs; apply knowledge of programming techniques & comp. systems; evaluate user requests for new or modified programs to determine feasibility, cost & time required, compatibility with current sys. & comp. capabilities; consult with users to identify current operating procedures and clarify program objectives; formulate plan outlining steps required to develop program using structured analysis & design; convert project specifications, using flowcharts & diagrams into sequence of detailed instructions & logical steps for coding into language processable by computer; apply knowledge of computer programming techniques & computer language. Perform analysis, design, development, implementation and user support of systems using the following tools: Visual Basic, MS Access, ODBC, DDE; SQL Server on the operation systems Windows for work groups, Windows 3.1 in the client and OS/2, Windows NT in the server. Reqs: Bachelor's in Computer Science, Systems Analysis, Computer Information Systems, Computer Engineering, Electrical Engineering, Mathematics or its equiv. in ed. & exp. & 2 yrs. exp. in the job offered or 2 yrs. exp. in related occup. such as Programmer, Programmer Analyst, Systems Analyst, Software Engineer, Consultant or Analyst Programmer. Will accept 3 yrs. of college ed. plus 3 yrs. exp. in the job offered or in a related occup. in lieu of the req'd. ed. & exp. Must have some related exp. which includes analyzing, designing and developing systems and using Windows NT, Visual Basic, SQL, Server, ODBC and DDE. \$41,000/yr, 40 hrs/wk, 8:30a-5p. Send resume to 7310 Woodward Ave, Rm 415, Detroit, MI 48202 & include Ref #. Employer Paid Ad.

Relational Database Programmer/Analyst: Perform in-house programming/analysis functions, with particular attention to the maintenance & development of relational database, relational database management systems & end-user PC applications. Design & develop improved database structures, including structure definition & table normalization. Analyze & improve performance of existing database applications & design, develop & test new applications, for use in production, accounting, administration, AR/AP functions, utilizing Paradox, PAL, R:Base & SQL. Integrate applications into Novell LAN & perform LAN-based simulations tests. Perform debugging of applications & end-user technical assistance. Must have M.S. degree in M.I.S. & have completed at least 1 course each in: 1) Data Structures, 2) Local Area Networks, 3) Computer Simulation in Business, 4) Business Applications of Database Management Systems, and 5) Expert Systems. Must have 3 months experience in the job offered or as Graduate Research Assistant. Experience must involve restructuring a database, including normalizing tables, defining database structure, writing procedures & rules, designing data entry forms, standard report formats & menu driven applications. Must have completed 1 major project each in a) development of prototype menu driven data base application for coordinating operations among separate business departments, AND b) design & analysis of A/R & Inventory Control modules. 40hrs/wk, 9am-5pm, \$41,000/yr, overtime exempt. Must have proof of legal authority to work permanently in the U.S. Send resume to Illinois Department of Employment Security, 401 South State Street - 3 South, Chicago, IL 60605, Attn: JANET ASCHENBRENNER, Ref# V-IL-14131-A. NO CALLS. AN EMPLOYER PAID AD - SEND 2 COPIES OF BOTH RESUME & COVER LETTER.

Programmer/Analyst - maj. of time at cdt sites in St. Louis; balance of time in Omaha, Des Moines, Cedar Rapids & Minneapolis. Analyze users' needs; eval. existing systems; enhance & modify modules to applications; interface d/bases thru screens, report generation & data storage. Utilize Oracle 7.0, PRO/C & Lotus Notes. Bachelors/Comp Sci. or Engg or Math. 2yrs/exp. including 2yrs using Oracle 7.0 & PRO/C & 1 yr using Lotus Notes. Must be willing to travel & relocate as needed (reimbursed by employer). 40hrs/wk (9-6). \$48,000/yr, (\$23.08/hr O/T as needed). Send resume to Mrs. J. Gaston, Division of Employment Security, P.O. Box 339, Florissant, MO 63032. Refer to Job No. 361350.

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Software Engineer--New Product Development

Will develop software for systems and peripherals used in retail point-of-sale (POS) applications. The ideal candidate will be part of a team developing leading-edge software technologies for the retail POS industry. BSCE or BSCS with 3+ years' experience in software development required. Must have experience with C++, 32-bit Windows Programming, OLE Automation and OLE Control, and Windows Device Drivers.

Software Engineer--New Product Development

Will develop video driver software for retail POS terminals. Ideal candidate will have 2+ years' experience developing video drivers under Microsoft Windows. BSCE/CE/CS required.

Software Engineer--Product Engineering

Will provide software and/or firmware design support for systems and peripherals used in retail point-of-sale applications. The ideal candidate will support a variety of products, performing tasks such as feature/function enhancements, custom software development, and factory and customer design support. BSCE or BSCS with a minimum of 2 years' experience in software development required. Experience with C++, Assembler, DOS, Windows, OS 2, and/or NT a plus. Development or support of BIOS, drivers or system software as well as capability to use tools such as ICE, soft-ICE, and kernel debugger desired. Previous experience in POS software development or support preferred. This is a challenging position with opportunity to move into new product development by demonstrating the right combination of teamwork, motivation, and technical ability.

Product Managers--Retail Store Automation

Seeking Product Managers to drive retail POS terminal, peripheral, and software requirements. Individuals will lead programs from concept through release, utilizing and growing skills in market analysis, business modeling, product/solution definition, product launch and lifecycle management. These positions offer individuals the opportunity to drive both Product Management and Marketing strategy with Retail Industry focused development, marketing, and sales teams.

DATABASE ANALYST II

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- Assisting the Lead Database Analyst with the evaluation, selection, installation, testing and maintenance of Database and other related software products;
- Performing system and statistical analysis of database systems to recommend configuration changes to improve performance of the system;
- Assisting the applications programming staff with the design and backup and recovery procedures for database applications;
- Assisting the BIS staff with technical requirement for the replacement customer information system; and,
- Assisting in the selection and implementation of work station database products.

Must have: Bachelor's degree in Computer Science, MIS, or technical field involving computer science course work; three years of progressively responsible database management experience in DB2 on larger scale mainframe running MVS.

Desirable: ADABAS, NATURAL, AND CICS experience.

Salary range: \$40,980-\$59,280 per year

The application period for this job is open on a continuous basis beginning April 15, 1996. It is subject to closing without notice when either a sufficient number of qualified applications is received or a selection has been made and the position filled.

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COLORADO SPRINGS UTILITIES

Software Engineer I to develop real-time embedded software for wide area two-way radio communication system, utilize structured software design methods, C programming & real-time operating systems in developing system software; provide initial testing of developed software; network wide area systems using packet switches & fault tolerant devices; develop real-time software for two-way radio wide area network systems utilizing operating systems, structured software & computer networks; incorporate congestion avoidance methods for high speed, asynchronous transfer mode switches (ATM) for application to two-way radio communication systems; write system programs using application interface of switches based upon design & architecture of ATM switches upon various load conditions. Master's degree in Computer Science required as well as one year & six months experience as Software Engineer I or one year & six months experience as Associate Developer and/or Research Engineer and/or Graduate Teaching Assistant. Applicants must have completed one course each in: computer networks; computer architecture; parallel process computer systems; network analysis & synthesis; advanced operating systems; microprocessors; systems programming; & control systems. Experience must have included: design, coding & testing of recovery & diagnostic software within a real-time operating system; & writing programs using the application interface of ATM switches. Applicants must have proof of legal authority to work permanently in the U.S. 40 hours, 8:00am to 5:00pm, \$43,000/year. Send 2 copies of resume & cover letter to Illinois Department of Employment Security, 401 S. State-3 South, Chicago, IL 60605, Attn: Brenda Kelly, Ref. #V-IL-14534-K. No Calls. Employer paid ad.

COMPUTER SYSTEMS ANALYST

Applicant must have:

- Bachelor's degree in Computer Science or related field
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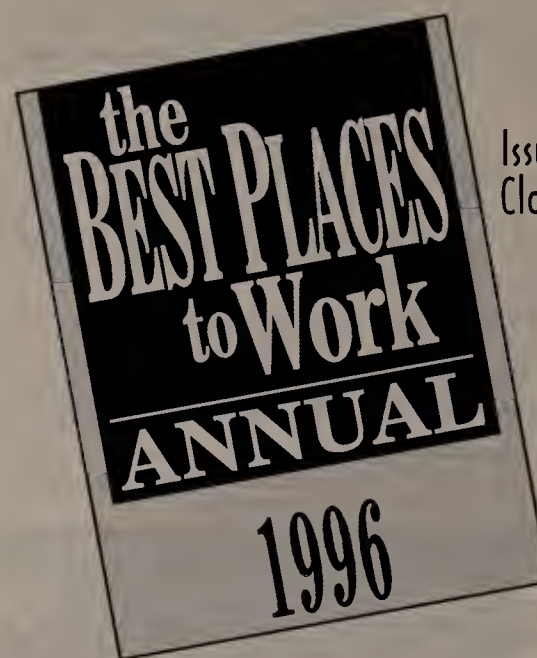
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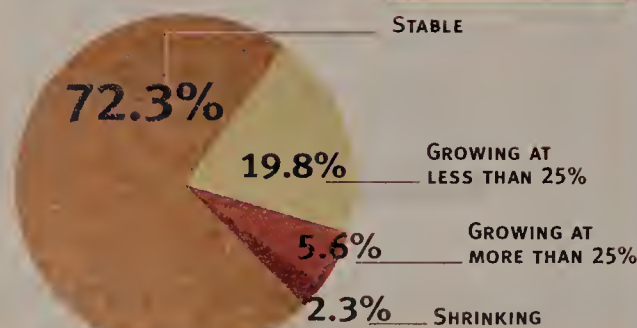
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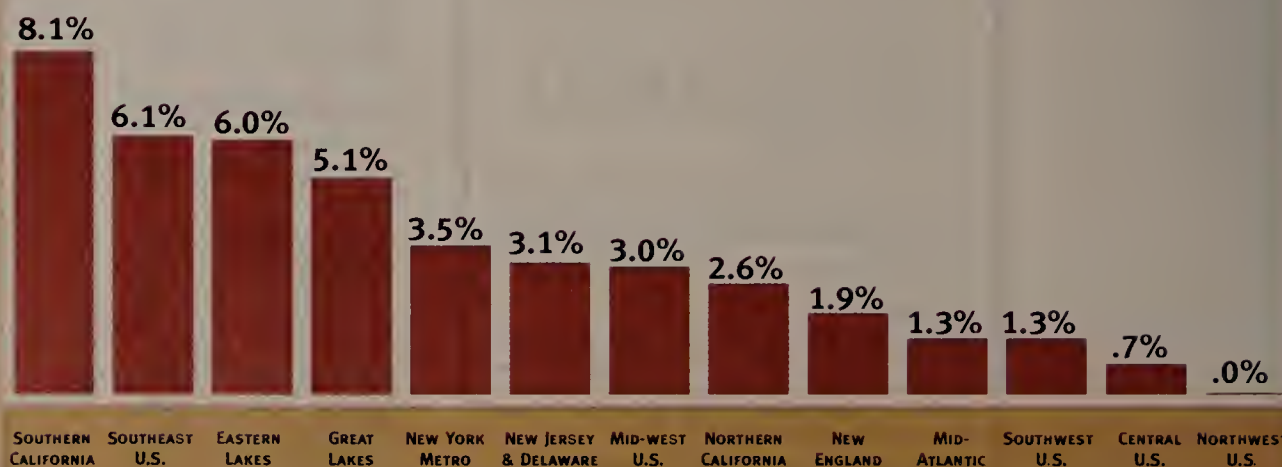


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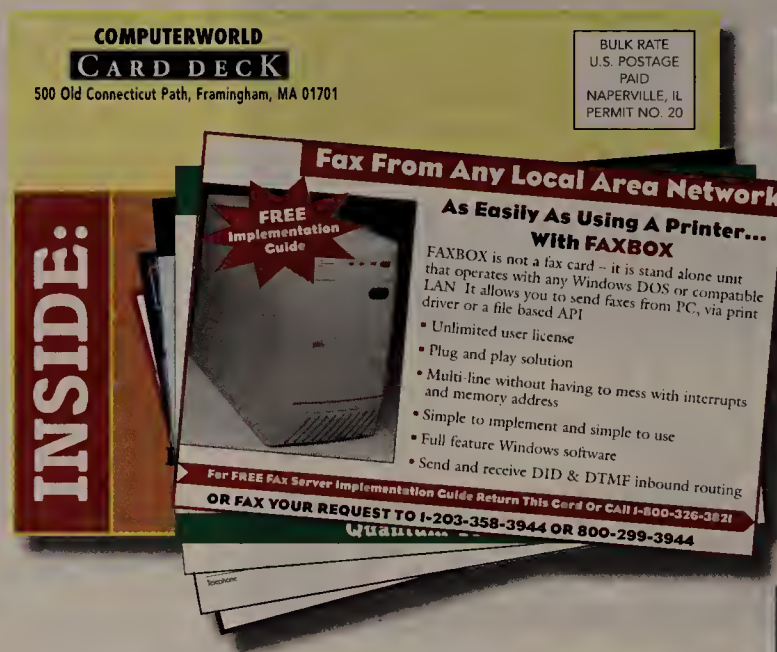
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Marketplace

The skinny on scanners

Input devices are spreading beyond high-end applications and becoming more useful in the corporate world

By Lynn Haber

Scanner technology, usually associated with high-end applications such as imaging and publishing, is becoming more widespread, with low-end and midrange products targeted for office applications.

Low-end scanners tend to be easy to use and low in cost and have a broader application range than do image scanners, which often are found in vertical markets, says Abhijeet Rane, an analyst at Link Resources, Inc. in New York.

Products such as Canon Computer Systems' TX4025, Epson America, Inc.'s ES-1200C and Visioneer, Inc.'s PaperPort VX represent the low end of the scanner market, where pricing starts at a few hundred dollars. Available in either flatbed or sheetfed models, low-end scanners are primarily used for managing paper on the desktop.

Users can expect to see 600 dot/in. replace 300 dot/in. as the standard resolution for low-end products by the end of the year. Resolution is typically dictated by that of output devices such as laser printers.

While some organizations opt to put a low-end scanner on every desktop, a more likely scenario is that each department will have a few networked scanners.

Midrange scanners

Midrange scanners are commonly used for document imaging applications. They are usually operated by one or two people on a

dedicated workstation. These high-speed devices produce 20 to 40 page/min. and range in price from \$6,000 to \$10,000.

The scanning market for document imaging faces obstacles, including integration with the network environment, user-friendliness and the drain on network bandwidth. Those problems are slowly being addressed, according to Kristy Holch, a principal at InfoTrends Research Group, Inc. in Plymouth, Mass.

"The whole enterprise infrastructure — networking, PCs and operating system environments — are more image-friendly than they were in the recent past," she says.

Hewlett-Packard Co. recently defined a new product category in the midrange when it introduced the networked ScanJet 4SI. The ScanJet 4SI allows workgroup members to scan documents to share them. A step ahead of the low-end products in terms of sophistication, the ScanJet 4SI targets document imaging applications. The flatbed gray-scale scanner connects to an Ethernet or Token Ring LAN and features 300 dot/in. resolution at up to 15 page/min.

Top-rung products

Going another step up in the market are high-end scanners for document imaging in a centralized capacity — in an order processing department, for example. Here, scanners exceed 40 image/min. and may cost more than \$100,000.

In general, expect better products at affordable prices to continue to drive both the low-end and midrange scanner markets. "The technology continues to advance. There's no reason for organizations to put off scanner purchases," Holch says.

Haber is a freelance writer in Norwell, Mass.

Consider this

If you're in the market for a scanner, keep the following factors in mind:

- What's your application?
- What will you do with the document after scanning?
- What's the software bundle?
- Consider vendor's service and support as part of the overall product cost.

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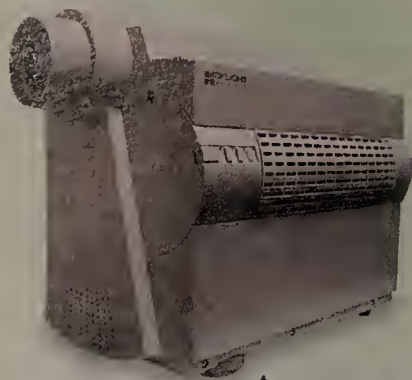
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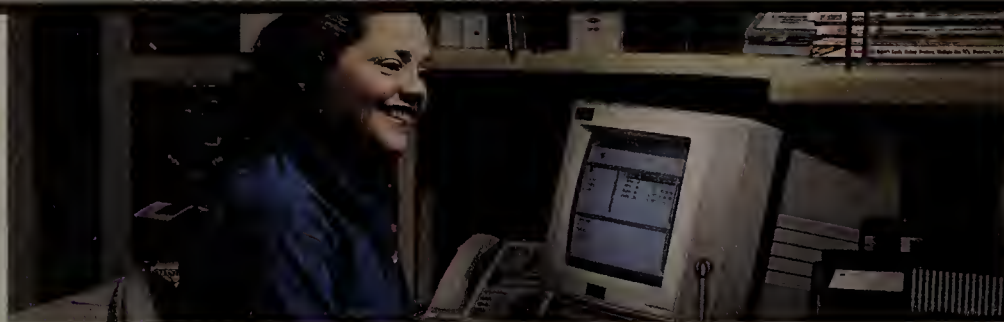


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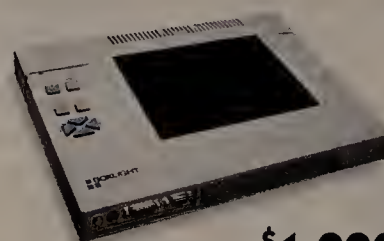
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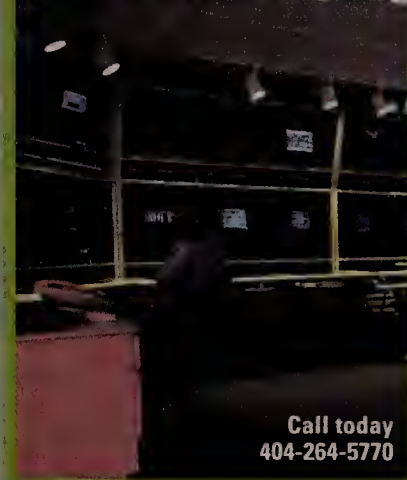
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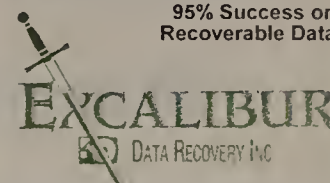
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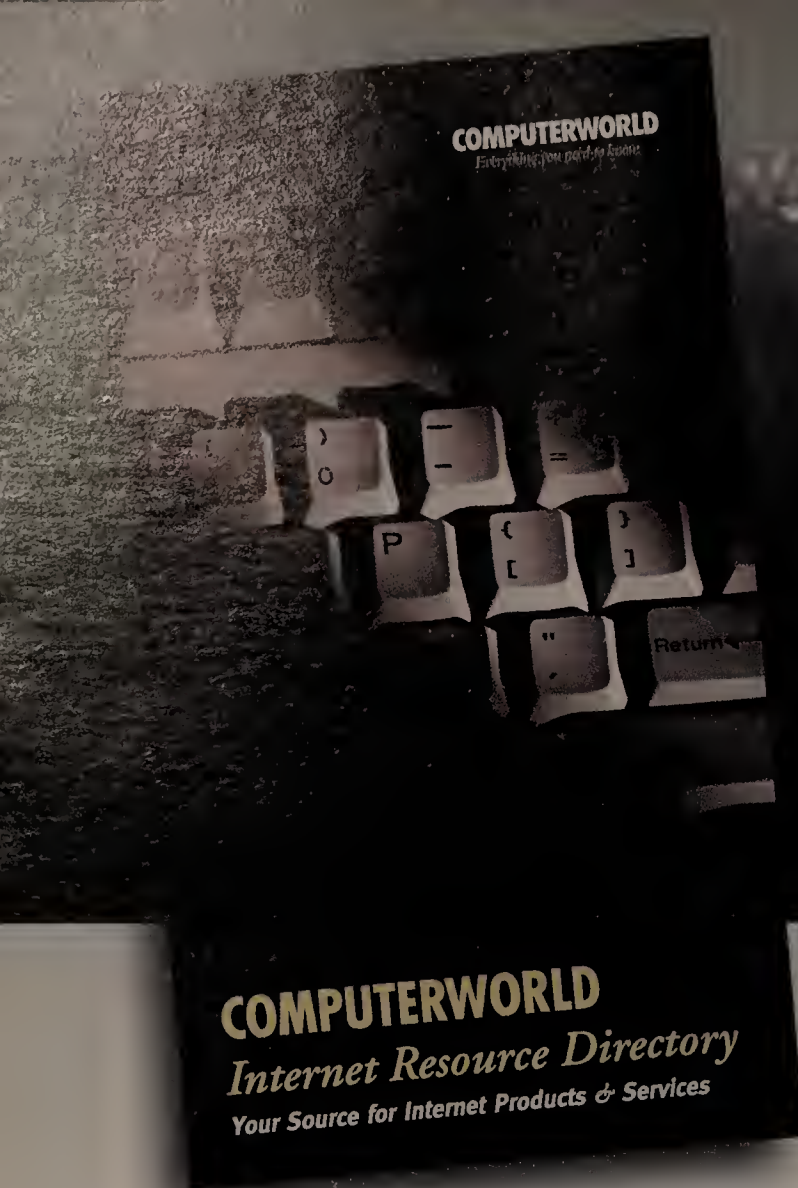
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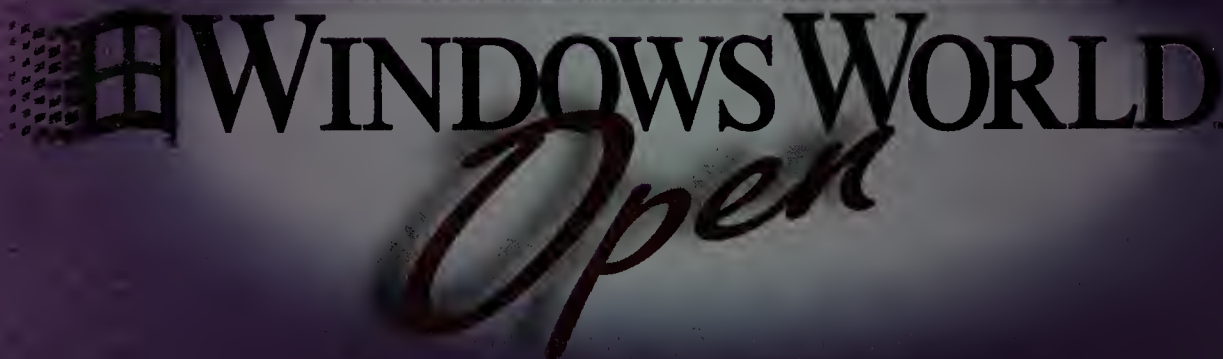
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Analysis for the masses

Arbor Software Corp. (Nasdaq:ARSW), a pioneer in on-line analytical processing (OLAP), has been a hot stock since Morgan Stanley took the company public in November. The stock jumped from \$17 to \$39 on the first day of trading. The stock is still expensive — trading at 83 times our earnings forecast for 1997.

Investors are willing to pay a premium for Arbor because it offers a reasonably priced product that delivers an immediate solution to a known analytical problem. After years of collecting data in relational databases, users are poised to access that data via fast OLAP engines and data warehouses. Arbor's Essbase lets them access and work with presummarized data via an Excel spreadsheet (or a custom front end) by typing in field names. The software contains analytical functions that would require custom programming in a relational database. The product is quick, easy and unobtrusive.



However, IS managers who have pushed their organizations to move to a single relational database standard, such as those set by Oracle Corp. (Nasdaq:ORCL) or Informix Corp. (Nasdaq:IFMX), cringe at the notion of using a product that moves data out of the standard and into its own data store, as Essbase does. Although keeping all data in a single relational database has administrative advantages, it may not meet the analytical needs of certain users.

A crop of relational OLAP companies has emerged to layer multidimensional analysis on top of relational databases, just as Essbase does. However, these products are complex, proprietary and slower than Essbase.

Of more consequence is Oracle's acquisition of a multidimensional OLAP product from Information Resources, Inc. (Nasdaq:IRIC). Now called Oracle Express, the product represents a one-stop-shopping alternative from a large competitor with significant customer mind share.

Nevertheless, Arbor should continue to win customers because it has the best-performing, most proven OLAP solution on the market. The product is easier to use, faster to set up and produces faster results than any of its competitors.

Phillips is the enterprise software industry analyst at Morgan Stanley & Co., a global investment banking firm in New York. He welcomes comments at chasp@ms.com or (212) 761-4450.



Making investments less taxing

By Leslie Goff

If writing that check to the IRS was especially painful this year, take heed: Changes in your high-tech investment strategy could help ease that pain next year.

Some tax planners say you shouldn't worry about the tax ramifications of equity investments.

"You only pay taxes when you make money," says Tony Ventura, manager of tax and financial planning for Smith Barney, Inc. in New York. "First try to make money, then fret over taxes."

However, others say that tax considerations should influence your investment strategy. "When it comes to allocation of common stocks, you have to consider what's the best return on an after-tax basis, not merely what's the maximum possible return," says Stephen Smith, a vice president at investment firm Standish, Ayer & Wood, Inc. in Boston.

Consider the following scenario: Your Compaq Computer Corp. (NYSE:CPQ) stock had a huge gain, but you now believe that Gateway 2000, Inc. (Nasdaq:GATE) is poised to soar. So you decide to take your profit by selling the Compaq stock, and you reinvest it in Gateway. But before you act, you should weigh the capital gains tax you'll owe on the profit from Compaq against your potential gain on the Gateway stock, Smith says.

"It's important to recognize that if you like Gateway only slightly better, you might be better off on an after-tax basis just hanging onto Compaq," he says.

In fact, because high-tech stocks are typically

high-growth companies that do not pay dividends, capital gains are the single most important tax ramification of owning high-tech stocks. And that can be good news for high-tax-bracket investors. "Capital gains are more tax-friendly than dividend income," says Clark Blackman, director of personal financial services at Price Waterhouse LLP in Houston.

Dividend income is taxed at your tax bracket, which can be as high as 38.6%. However, if you've held onto the stocks at least one year, the maximum capital gains tax is only 28%. In addition, capital gains taxes can benefit investors in lower tax brackets because the tax code stipulates that your capital gains tax rate cannot exceed your income tax rate.

For information systems professionals subject to the whims of a sometimes unpredictable job market, investments in high-growth, high-tech stocks can shore up cash assets during periods of unemployment without a harsh tax bite. If you anticipate your tax bracket will be less than 28% in a given year but will rise the year after that, consider selling some investments since your capital gains tax rate will only be as high as your income tax rate, Blackman says.

Incorporating tax planning into your trading decisions can help you offset gains with losses, notes Charlotte Beyer, founder and director of the Institute for Private Investors in Summit, N.J. The 250-member group services high-equity investors.

The key is to diversify your holdings among several high-tech market segments to reduce your exposure to huge losses or huge gains in any one sector. ■

Goff is a freelance writer in New York.

The Week in Stocks

Gainers Losers

PERCENT

Micro Focus	25.6	Informix Corp.	-22.5
UUNET Tech.	24.1	Group I Software	-17.4
Computervision Corp.	20.3	Network Computing Devices(L)	-16.7
Dataware Technologies Inc.	18.6	FORE Systems Inc.	-13.0
Intersolv Inc.	18.0	Weitek	-13.0
Discreet Logic Inc.	17.0	Cognitronics Corp.	-12.7
Spyglass Inc.	16.2	Applix Inc.	-10.9
Interleaf Inc.	15.0	Control Data Systems Inc.	-10.5

DOLLAR

UUNET Tech.	7.00	FORE Systems Inc.	-9.00
Netscape Comm. Corp.	5.88	IBM	-6.13
Arbor Software(H)	4.38	Shiva Corp.	-5.75
Motorola Inc.	3.75	Informix Corp.	-5.75
Spyglass Inc.	3.38	Applix Inc.	-4.25
Oell Computer Corp.	3.25	Computer Associates	-4.25
Autodesk Inc.	3.13	Peoplesoft	-4.13
Stratacom Inc.	2.88	Xylan Corp.(H)	-3.75

Industry Almanac

CompUSA bucks slowdown

PC sales are slow. Software sales are down. With this bad news, are the big gains posted by computer retailer **CompUSA, Inc.** (NYSE:CPU) a flash in the pan or a sign of a market leader beating its competitors to sales?

"CompUSA's short-term and long-term prospects are excellent. They are doing everything right," says Michael Rosen, a market analyst at Lazard Freres & Co. in New York. CompUSA's total revenue is consistently at least 10% higher than its competitors', Rosen says. And its gross profit margins improved 1% in the most recent quarter while its competitors' gross margins slipped, he says.

Changes have been afoot at CompUSA since CEO James Halpin took over in early 1994 and began replacing top officials and slashing costs. He reformatted stores to display more software and emphasize high-margin products.

CompUSA has achieved this success even though the growth rate of its square-foot retail space has been slower than that of competitors such as **Tandy Corp.**'s (NYSE:TAN) Computer City, **Best Buy Co.** (NYSE:BBY) and **Circuit City Stores, Inc.** (NYSE:CC), Rosen says.

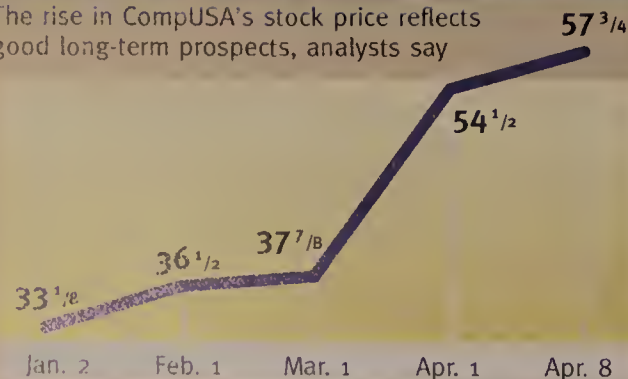
CompUSA's revenue remains strong in the face of the national trend of slowing PC sales. "They say they haven't had a slipage in PC sales, but then again, they aren't dependent on PC sales," Rosen says. "They also have a tremendous training business, a solid direct-sales division and a mail-order business."

But some analysts have a hold on the stock. "CompUSA is continuing to gain market share, and its long-term prospects look bright. But right now, based on its growth rate and multiples, I think the stock is very pricey," says Terrance McEvoy, an analyst at Janney Montgomery Scott, Inc. in New York.

— Stewart Deck

What PC slowdown?

The rise in CompUSA's stock price reflects good long-term prospects, analysts say



EXCH	52-WEEK RANGE		APR. 12 Wk Net Wk Pct			EXCH	52-WEEK RANGE		APR. 12 Wk Net Wk Pct				
			3PM	CHANGE	CHANGE				3PM	CHANGE	CHANGE		
Communications and Network Services						OFF 1.90%							
COMS	53.63	25.75	3 COM CORP.	36.38	-0.88	-2.3	ORCL	55.00	28.00	ORACLE CORP.	43.88	-1.63	-3.6
AIT	66.88	42.25	AMERITECH CORP.	54.88	0.13	0.2	PMTQ	40.25	18.13	PARAMETRIC TECHNOLOGY	37.50	-0.25	-0.7
AXE	22.13	15.75	ANIXTER INTL. (L)	16.13	-0.38	-2.3	PARQ	14.50	6.63	PARCPLACE SYSTEMS INC.	8.75	-0.50	-5.4
APTS	15.00	2.75	APERTUS TECH.	3.75	0.00	0.0	PSFT	60.50	19.63	PEOPLESOFT	49.75	-4.13	-7.7
T	68.88	47.88	AT & T	63.00	0.13	0.2	PTEC	16.13	6.75	PHOENIX TECHNOLOGIES	14.13	0.13	0.9
ASND	62.00	8.13	ASCENO COMMUNICATIONS (H)	55.75	-3.00	-5.1	PSQL	16.88	3.13	PLATINUM SOFTWARE	7.00	0.13	1.8
8NYN	18.63	6.00	BANYAN SYSTEMS INC.	7.13	0.63	9.6	PLAT	26.00	11.25	PLATINUM TECHNOLOGY	13.25	-1.50	-10.2
8AY	50.00	21.75	8AY NETWORKS INC.	26.63	-2.25	-7.8	PRGS	38.00	14.75	PROGRESS SOFTWARE CORP.	15.63	-0.25	-1.6
88N	48.75	16.50	88N CORP.	23.88	-1.25	-5.0	RNBO	26.75	16.00	RAINBOW TECHNOLOGIES INC.	17.25	-0.50	-2.8
8EL	80.38	52.00	BELL ATLANTIC CORP.	60.13	-1.88	-3.0	ROSS	7.75	2.19	ROSS SYSTEMS	4.44	0.31	7.6
8LS	45.88	29.13	BELLSOUTH CORP.	36.63	-0.50	-1.3	SCOC	14.00	5.50	SCO INC.	7.13	0.13	1.8
8RKT	37.25	9.13	BROOKTROUT TECHNOLOGY	36.50	1.25	3.5	SDTI	67.50	15.75	SECURITY DYNAMICS TECH.	49.63	-0.13	-0.3
CS	87.75	44.88	CABLETRON SYSTEMS	63.75	-2.50	-3.8	SKEY	51.75	13.38	SOFTKEY INTERNATIONAL INC.	24.44	2.44	11.1
CSCC	92.75	20.38	CASCADE COMMUNICATIONS	87.75	-2.50	-2.8	SPCO	5.13	2.19	SOFTWARE PUBLISHING CORP.	2.88	-0.13	-4.2
CGRM	25.13	12.75	CENTIGRAM COMMUNICATIONS	22.13	-0.38	-1.7	SQAX	30.25	16.00	SQA INC. (H)	29.25	0.00	0.0
CSCO	51.00	18.50	CISCO SYSTEMS INC.	46.38	-2.13	-4.4	SOTA	14.88	6.63	STATE OF THE ART	12.25	-0.25	-2.0
CLIX	11.38	4.50	COMPRESSION LABS INC.	5.13	0.31	6.5	SSW	75.63	32.88	STERLING SOFTWARE INC. (H)	71.13	-3.63	-4.8
CMNT	12.75	4.00	COMPUTER NETWORK TECH.	5.44	-0.06	-1.1	SORC	37.38	9.25	STRUCT. DYNAMICS RESEARCH (H)	34.50	-1.13	-3.2
XCMM	14.50	8.75	CROSSCOMM	11.38	-0.13	-1.1	SYBS	39.75	19.88	SYBASE INC.	24.25	-0.50	-2.0
DIGI	64.00	21.88	OSC COMMUNICATIONS	26.63	2.00	8.1	SYMC	33.25	9.88	SYMANTEC CORP.	12.88	0.75	6.2
FORE	75.00	25.50	FORE SYSTEMS INC.	60.00	-9.00	-13.0	SYNS	38.50	23.00	SYNOPSYS	31.00	0.25	0.8
GDC	21.88	9.25	GENERAL DATACOMM INDS.	10.75	-0.38	-3.4	SSAX	30.63	12.63	SYSTEM SOFTWARE ASSOC.	22.50	-0.25	-1.1
GSX	42.50	28.00	GENERAL SIGNAL NETWORKS	36.25	0.13	0.3	SYSF	18.13	8.75	SYSTEMSOFT CORP.	15.56	-1.44	-8.5
GTE	49.25	31.88	GTE CORP.	42.50	-0.88	-2.0	TRUV	10.13	3.88	TRUEVISION CORP.	7.75	-0.25	-3.1
LU	33.50	29.75	LUCENT TECH.	31.75	1.13	3.7	VIEW	15.13	8.38	VIEWLOGIC SYSTEMS	12.50	0.25	2.0
MCIC	31.13	19.09	MCI COMMUNICATIONS CORP.	28.00	-1.88	-6.3	VMRK	21.50	5.75	VMARK SOFTWARE INC.	7.38	-0.13	-1.7
MICM	12.50	5.50	MICOM COMMUNICATIONS CORP.	7.63	-0.88	-10.3	WALK	12.00	4.63	WALKER INTERACTIVE SYSTEMS (H)	11.00	-0.63	-5.4
MNPI	34.50	9.13	MICROCOM INC.	27.38	-2.63	-8.8	WALL	23.25	13.00	WALL DATA INC.	15.50	-0.38	-2.4
NETM	34.00	9.38	NETMARG INC.	9.88	-0.13	-1.3	WANG	25.38	12.38	WANG LABORATORIES INC.	24.63	-0.25	-1.0
NTRX	8.75	3.63	NETRIX CORP.	5.00	0.25	5.3	Internet						UP 7.36%
NCDI	12.00	3.13	NETWORK COMPUTING DEVICES (L)	3.13	-0.63	-16.7	AMER	60.00	16.75	AMERICA ON-LINE	52.38	-2.38	-4.3
NWK	42.00	19.75	NETWORK EQUIPMENT TECH.	30.25	-0.63	-2.0	LCOS	29.25	14.75	LYCOS INC.	17.25	-0.75	-4.2
NETG	46.50	22.75	NETWORK GENERAL	37.75	-1.75	-4.4	NETC	91.50	19.22	NETCOM ON-LINE	27.00	2.38	9.6
NN	57.75	25.00	NEWBRIDGE NETWORKS CORP. (H)	55.63	1.13	2.1	NSCP	87.00	22.88	NETSCAPE COMM. CORP.	51.50	5.88	12.9
NT	50.88	31.50	NORTHERN TELECOM LTD.	48.13	-1.13	-2.3	PSIX	29.00	6.75	PSINET (L)	9.50	0.13	1.3
NOVL	23.25	11.38	NOVELL INC.	13.38	-0.13	-0.9	QDEK	39.50	4.25	QUARTERDECK CORP.	13.88	0.44	3.3
NYN	59.25	39.25	NYNEX CORP.	50.13	-1.88	-3.6	SPYG	61.00	13.25	SPYGLASS INC.	24.25	3.38	16.2
OCTL	50.50	18.00	OCTEL COMMUNICATIONS CORP.	48.50	-1.25	-2.5	UUNT	98.75	21.75	UUNET TECH.	36.00	7.00	24.1
ODSI	43.25	17.00	OPTICAL DATA SYSTEMS INC.	19.75	-1.13	-5.4	Semiconductors						OFF 0.15
PTCL	44.72	18.00	PICTURETEL CORP.	28.75	-1.50	-5.0	AMO	39.25	16.13	ADVANCED MICRO DEVICES	17.25	0.00	0.0
PTON	10.75	4.75	PROTEON INC.	5.44	0.19	3.6	ADI	30.13	16.63	ANALOG DEVICES INC.	26.00	-1.13	-4.1
RACO	7.88	4.25	RAECOTEK INC.	4.75	-0.13	-2.6	CHPS	15.88	7.38	CHIPS AND TECHNOLOGIES	8.75	-0.25	-2.8
RETX	6.75	1.81	RETIX (H)	6.19	0.19	3.1	CRUS	61.13	17.00	CIRRUS LOGIC	17.75	-0.13	-0.7
SFA	24.63	11.38	SCIENTIFIC ATLANTA INC.	17.13	-0.75	-4.2	CY	27.75	10.00	CYPRESS SEMICONDUCTOR CORP.	13.00	1.25	10.6
SHVA	101.25	29.75	SHIVA CORP.	92.75	-5.75	-5.8	CYRX	49.75	18.25	CYRIX	25.81	2.31	9.8
SBC	60.25	42.63	SOUTHWESTERN BELL CORP.	47.50	-2.25	-4.5	INTC	78.38	43.25	INTEL CORP.	60.00	0.75	1.3
FON	45.50	29.25	SPRINT CORP.	37.75	-0.88	-2.3	LSI	62.50	22.50	LSI LOGIC CORP.	30.38	1.75	6.1
SMSC	23.50	12.50	STANOARO MICROSYSTEMS CORP.	14.63	-1.00	-6.4	LSCC	43.00	23.13	LATTICE SEMICONDUCTOR	27.75	-2.88	-9.4
STRM	44.50	16.00	STRATACOM INC.	36.13	2.88	8.6	MCRJ	32.50	12.25	MICREL SEMICONDUCTOR INC. (L)	13.00	-1.50	-10.3
TBIT	8.63	2.38	TELEBIT CORP.	6.00	0.31	5.5	MU	94.75	27.50	MICRON TECHNOLOGY	32.88	1.88	6.0
USRX	139.75	31.63	US ROBOTICS	125.13	-1.88	-1.5	MOT	82.50	44.75	MOTOROLA INC.	55.50	3.75	7.2
USW	48.38	28.38	US WEST INC.	32.38	-0.75	-2.3	NSM	33.63	13.50	NATIONAL SEMICONDUCTOR (L)	14.13	0.13	0.9
XIRC	15.38	8.88	XIRCOM	13.88	0.25	1.8	SERA	28.75	9.75	SIERRA SEMICONDUCTOR	19.75	0.00	0.0
XYLN	73.50	51.25	XYLAN CORP. (H)	63.25	-3.75	-5.6	TXN	83.75	42.75	TEXAS INSTRUMENTS	51.75	0.88	1.7
PCs and Workstations						UP 0.00%							
AALR	9.63	4.50	ADVANCED LOGIC RESEARCH	6.75	-0.25	-3.6	TXCC	14.25	7.88	TRANSWITCH CORP.	12.25	0.25	2.1
AAPL	50.13	23.00	APPLE COMPUTER INC.	25.63	1.50	6.2	VLSI	39.13	10.75	VLSI TECHNOLOGY	13.50	0.13	0.9
ASTA	19.13	4.63	AST RESEARCH INC.	5.00	0.00	0.0	WWTQ	6.88	1.25	WEITEK	1.25	-0.19	-13.0
CPQ	56.75	31.13	COMPAQ COMPUTER CORP.	39.38	1.75	4.7	WOC	22.13	13.50	WESTERN DIGITAL CORP.	19.25	-0.25	-1.3
OELL	49.38	21.50	DELL COMPUTER CORP.	39.88	3.25	8.9	XLNX	55.50	21.25	XILINIX	30.38	-3.13	-9.9
GATE	37.50	17.38	GATEWAY 2000 INC.	31.25	1.25	4.2	ZLG	54.13	28.50	ZILOG INC.	35.25	0.38	1.1
HWP	104.13	59.88	HEWLETT PACKARD CO.	95.38	-1.00	-1.0	Peripherals and Subsystems						OFF 0.48%
MUEI	29.88	9.00	MICRON INTERNATIONAL INC.	10.63	0.63	6.3	APCC	25.88	7.88	AMERICAN POWER CONVERSION	10.38	0.25	2.5
NIPNY	75.13	51.00	NEC AMERICA	58.00	-0.38	-0.6	AOPT	56.38	29.25	AOAPTEC INC.	48.25	-1.00	-2.2
SGI	45.63	21.13	SILICON GRAPHICS	24.75	-0.50	-2.0	C8EX	13.13	4.25	CAMBEX CORP.	5.63	-0.13	-2.0
SUNW	57.13	17.00	SUN MICROSYSTEMS INC.	48.13	2.00	4.3	CGN	7.25	2.63	COGNITRONICS CORP.	3.88	-0.56	-12.7
Large Systems						OFF 1.35%							
AMH	13.63	6.75	AMDAHL CORP.	10.63	-0.25	-2.3	CREAF	14.13	5.75	CREATIVE TECHNOLOGIES INC.	6.00	-0.50	-7.7
CYR	29.25	18.13	CRAY RESEARCH INC.	24.63	-0.25	-1.0	RACE	13.13	3.63	DATA RACE INC.	4.00	-0.38	-8.6
DGN	19.13	7.13	DATAGENERAL CORP.	15.50	-0.50	-3.1	DTM	9.38	4.13	DATARAM CORP.	4.75	0.13	2.7
OEC	76.50	35.13	DIGITAL EQUIPMENT CORP.	52.38	-1.25	-2.3	EMC	27.38	13.00	EMC CORP.	21.38	-0.88	-3.9
IBM	128.88	83.13	IBM	111.63	-6.13	-5.2	EMLX	28.50	6.38	EMULEX CORP.	15.13	1.13	8.0
MDCO	16.13	3.00	MERIDIAN DATA INC. (H)	13.75	-0.38	-2.7	ESCC	25.25	13.00	EVANS AND SUTHERLAND	24.25	0.00	0.0
NETF	7.50	4.25	NETFRAME	4.75	0.13	2.7	EX8T	17.38	10.00	EXABYTE	17.13	1.00	6.2
SQNT	25.38	10.13	SEQUENT COMPUTER SYS.	12.63	0.38	3.1	IISLF	4.25	1.50	INTELLIGENT INFO. SYSTEMS	2.19	-0.19	-7.9
SEQS	10.00	2.88	SEQUOIA SYSTEMS INC.	3.06	-0.06	-2.0	IOMG	36.75	3.13	IOMEGA CORP. (H)	33.00	0.38	1.1
SRA	36.13	23.00	STRATUS COMPUTER INC.	27.25	-0.38	-1.4	IPLSA	7.88	2.50	IPL SYSTEMS INC.	5.50	-0.25	-4.3
TDM	17.50	8.38	TANDEM COMPUTERS INC. (L)	8.75	-0.13	-1.4	KMAG	37.50	16.25	KOMAG INC.	26.50	1.25	5.0
TRCO	5.75	2.00	TRICORO SYSTEMS	3.75	-0.25	-6.3	MLIS	7.50	1.25	MICROPOLIS CORP.	3.88	-0.06	-1.6
UIS	13.63	5.50	UNISYS CORP.	6.13	0.25	4.3	MTSI	37.75	11.25	MICRO TOUCH SYSTEMS INC.	15.75	0.88	5.9
Software						UP 0.75%							
ADBE	74.25	30.00	ADOBE SYSTEMS INC.	33.00	0.50	1.5	PEAK	34.75	16.75	PEAK TECHNOLOGY GROUP	18.50	0.50	2.8
AMSWA	8.75	3.50	AMERICAN SOFTWARE INC.	4.25	-0.25	-5.6	PNCJ	19.75	5.88	PINNACLE MICRO INC.	8.00	0.00	0.0
APLX	41.75	8.25	APPLIX INC.	34.75	-4.25	-10.9	PTNX	38.75	13.50	PRINTRONIX INC.	16.75	-1.00	-5.6
ARSW	58.75	28.75	ARBOR SOFTWARE (H)	53.38	4.38	8.9	AQM	6.38	3.25	QMS INC.	5.50	0.38	7.3
ACAQ	53.00	27.75	AUTODESK INC.	41.88	3.13	8.1	QNTM	28.50	15.38	QUANTUM CORP.	18.75	0.25	1.4
8ACH	11.88	4.63	8ACHMAN INFO. SYSTEMS	9.13	0.19	2.1	RDIUS	14.00	0.94	RAIUS INC.	2.75	0.19	7.3
8GSS	42.00	28.25	8GS SYSTEMS INC.	34.25	-0.06	-0.2	SEG	67.75	26.69	SEAGATE TECHNOLOGY	57.63	-0.88	-1.5
8MCS	61.38	27.63	8MC SOFTWARE INC.	55.00	-2.50	-4.3	STK	31.75	17.88	STORAGE TECHNOLOGY	25.50	0.38	1.5
8OOL	26.38	18.75	8OOLE AND 8ABBAGE	25.50	0.00	0.0	TEK	61.88	29.75	TEKTRONIX INC.	33.00	-1.88	-5.4
8ORL	21.25	7.75	8ORLANDO INT'L INC.	16.94	-1.31	-7.2	XRX	144.63	109.38	XEROX CORP.	127.25	-1.50	-1.2
80BYJ	93.75	29.00	80BUSINESS OBJECTS	80.50	1.50	1.9	Services						OFF 0.82%
CESH	3.94	1.38	CE SOFTWARE	2.50	-0.13	-4.8	AMSY	27.38	12.50	AMERICAN MGMT. SYSTEMS	25.13	-0.38	-1.5
CYE	2												

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CONTACTING US BY E-MAIL

Our Web address is www.computerworld.com. All of our staff members can be reached via E-mail on the **Internet** using the form first-name_lastname@cw.com. IDG News Service correspondents can be reached using the form first-name_lastname@idg.com. **Subscription** inquiries go to circulation@cw.com.

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CONTACTING CW EDITORS

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Editor	Paul Gillin (508) 620-7724
Executive Editor	Maryfran Johnson (508) B20-B179

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Network management	Patrick Dryden (B17) 924-54B5

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Application development

IS management

Client/server applications

Internet

Apple and PC software

Databases

Unix, Sun, open systems

Internet

Internet networking

Bob Francis (214) 387-1188
Frank Hayes (503) 252-0100
Thomas Hoffman (201) 5B7-0090
Julia King (610) 532-7599
Kim S. Nash (214) 716-9B22
Lisa Picarille (415) 54B-5571
Dan Richman (360) 579-2065
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Viewpoint Editor

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Careers

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CW Guide

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IDG NEWS SERVICE CORRESPONDENTS

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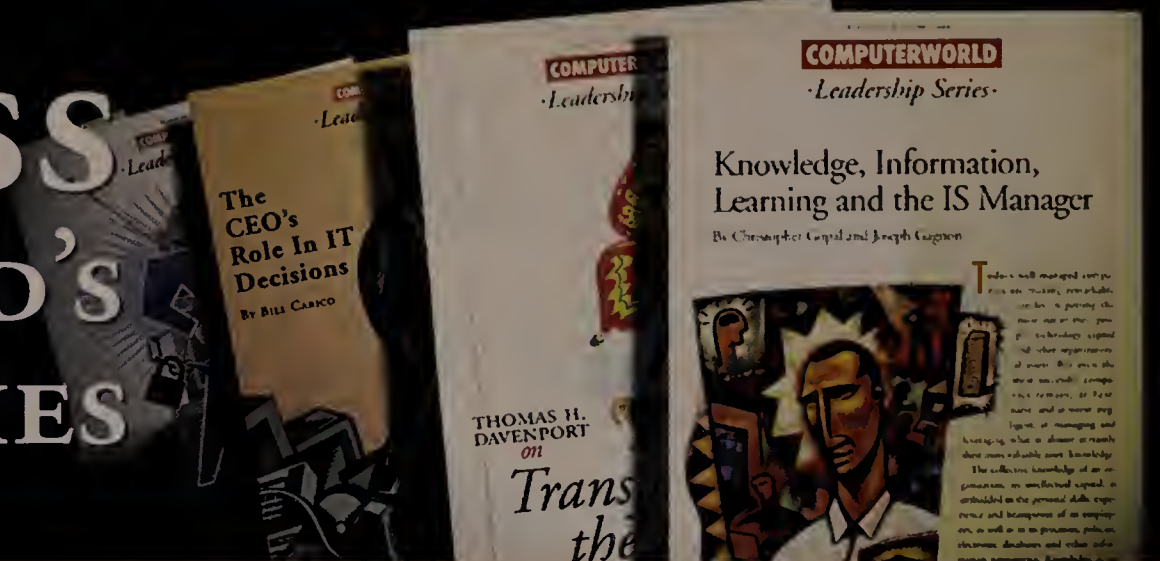
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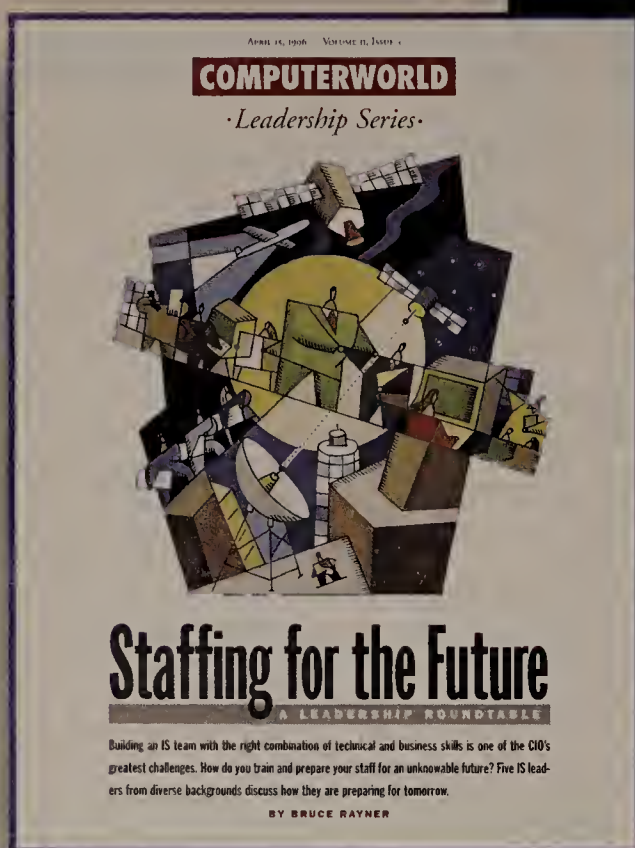
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COMPUTERWORLD

Everything you need to know.

Users tempt fate with Registry Editor

CONTINUED FROM COVER 1

It lets users store configuration files for all applications and system initialization files in one database, said Mike Nash, Microsoft's group product manager for Windows NT.

"If you don't take the time to learn how to use the Registry, you're playing with fire," Nash said, echoing feedback from users and consultants.

For example, a user who decides to use the Registry Editor instead of the Control Panel to change the background colors on his PC could easily crash the workstation if he has bitmaps loaded. Similarly, a network administrator who decides to perform a routine software change or upgrade could crash the NT Server if he isn't aware of potential conflicts between the application and the Registry Editor.

Advanced version

Microsoft designed the Registry Editor in Windows NT to be an advanced version of the initialization files in the Windows 3.x operating system, Nash said. Initialization files define the configuration settings that allow servers and

Tips to minimize downtime and restore server and configuration tables:

- 1 Have an Emergency Repair disk in place. Users can create an Emergency Repair disk during installation or by running REPAIR.EXE in the server directory.
- 2 If the server crash was the result of a trivial change to the desktop configuration, reboot the server and wait for the "Press the space bar now to restore Last Known Good menu" message. It will partially restore the Registry.
- 3 If you don't have an Emergency Repair disk, use the system Backup disk to restore Windows NT.

Source: Patrick Campbell, chief technical instructor, Tech-Teach International, Arlington, Va.

workstations to run properly.

The System INI files in older version of Windows required users to save changes, shut down the system and reboot for the changes to take effect. The new Registry Editor allows businesses to make systems changes without having to shut down the NT Server or Workstation.

The downside of this is that users are flying without a safety net, said Patrick Campbell, chief technical instructor at Tech-Teach International, Inc. in Arlington, Va.

"Changes to the Registry Edi-

tor are immediate and irrevocable. If you make a mistake, you can instantly hose your system," Campbell said. Users who are caught unaware — without an Emergency Repair disk or a Windows NT backup disk — will be forced to reinstall the network operating system and all the attendant applications from scratch.

Avoiding outages

Usually, network outages can be avoided if users opt to use the Control Panel facility to perform routine tasks, Campbell said.

Matthew Merrick, vice presi-

dent of information systems at The Merrick Printing Co. in Louisville, Ky., agreed. "I've been knee-deep in the Registry Editor. The trick is: Don't tempt fate." When he needs to change set-

doing, but he neglected to make an Emergency Repair or a backup disk.

"I got burned good. Fortunately, it didn't happen on a mission-critical applications server or I would have been toast," Wilkerson said.

Toasted was how another network administrator at a Midwestern insurance firm described himself after a similar experience with the Registry Editor. The administrator, who requested anonymity, said a two-hour routine software upgrade went awry.

"I crashed the network and spent the entire weekend in the office on the phone with Microsoft technical support. Thank God, it didn't happen during office hours, or it could have been my job."

— Laura DiDio

Disk barrier

CONTINUED FROM COVER 1

major desktop operating systems and operating environments — Microsoft's MS-DOS, Windows 3.1 and Windows 95 — can't access information on disk drives beyond 2G bytes. They also don't work correctly with network drives that have more than 2G bytes of free disk space. Information on those drives is effectively lost to the operating systems,

which can't see anything beyond 2G bytes. This could prove a particular problem with multimedia applications in which coordinated data streams are required.

"Users who have a lot of graphics applications want to use these drives on their systems, but if they don't know what's going on, they're going to be very frustrated," said Eric Goldoff, an IS manager at the Centers for Disease Control and Prevention in Atlanta.

Microsoft is aware of the problem with the other systems, said Brian Livingston, author of *Windows 95 Secrets* and an industry consultant based in Seattle.

According to Bill Veghte, group manager of hardware programs at Microsoft, the problem shouldn't affect too many current users. Veghte said Microsoft plans to make changes to the next version of Windows 95 so it can address larger disk drives in future releases.

In the meantime, users can partition the disk drive. That makes the operating system think it's looking at several drives instead of one. That may solve the problem, unless the system is using an older BIOS — usually before mid-1994 — that may need to be updated to read the larger drives, Livingston said.

Disk drive dilemma

2G-byte disk drive issue bedevils IS managers

PROBLEM

DOS, Windows or Windows 95 can't recognize local hard disk drive partitions larger than 2G bytes.

DOS, Windows or Windows 95 incorrectly reads network drives with more than 2G bytes of free disk space.

WORK-AROUND

Partition disk drive into two drive letters. The operating system will think it's seeing two drives.

Use other methods, such as Novell redirectors, to correctly determine free space.

But the Redmond, Wash., software giant discourages trying to run Windows 95 on a drive partitioned by Windows NT. Windows 95 wouldn't be able to accurately read the drive, he said.

Problem comes back

The problem often reappears if the system is rebooted from a floppy disk, such as a virus-scan disk, which resets the BIOS, Goldoff said. "Then you're back to square one," he said.

The problem dates back to the beginnings of 16-bit operating systems and MS-DOS in particular, said Julian Horwich, executive director of the Corporate Association of Microcomputer Professionals in Chicago.

"If you supported the largest number of possible clusters [of storage space] when you were designing your operating system, you sacrificed speed. And no one expected disk drives to be so large when they were designing DOS," he said.

With 32-bit operating systems such as Windows NT, disk partitions can be made at a maximum of 4G bytes, Livingston said.

That's one reason corporate IS managers are considering replacing 16-bit operating systems such as Windows or Windows 95 with 32-bit operating systems, Goldoff said.

Operating systems such as Unix, MVS and VMS can make much larger disk partitions.

Vendors team to meld EDI with Internet

Netscape Communications Corp. and General Electric Information Services last week gave birth to a joint venture aimed at melding the Internet and electronic data interchange (EDI).

The new company, Actra Business Systems, plans to build turn-key electronic commerce products that Actra, Netscape and GEIS will sell.

To market

The first product on Actra's agenda is a purchasing and supplier management application for on-line business-to-business buying.

That application is expected to enter beta testing early next year.

To overcome customer uncertainties, the Netscape/GEIS venture plans to build a line of EDI and commerce applications.

Those applications will use encryption and other security methods that work over the Internet rather than solely on proprietary networks.

— Kim S. Nash

Solution to this week's crossword puzzle



Once in a blue moon, when Hell freezes over and the time to get a replication accomplished are the answers to (1) how often IBM makes a smart move, (2) the chance Microsoft's Gates will have Oracle's Ellison as a houseguest and (3) the longest segment of time comprehensible to a Lotus Notes user.

Fat chance

.....
Computerworld crossword by Rick Bennett

Long shots, no-shows and legends
(only in their own minds) populate this week's entertainment.

ACROSS

- 1 Slightly wet
- 5 Apiece
- 9 Nonfunctional new UPS unit
- 14 Oscar-winning screenwriter Thompson
- 15 C++ mem. leak company
- 16 Attracts
- 17 Move about confusedly
- 18 Grueling test
- 19 Web objects (abbr.)
- 20 How often IBM makes a smart move?
- 23 CRT ancestor
- 24 Sabotage of someone's Web page, eg.
- 25 With 42 ACROSS, the biggest Lotus Notes frustration

- 31 Machine-language voodoo?
- 32 Bantus
- 33 Silicon Valley airport luggage tag
- 36 Type of Scitex proof
- 37 Chicago-area sch. hi-tech dept.
- 38 Whose '70s failed mainframe attempt?
- 39 Logical operator
- 40 Half of a base for 31 ACROSS
- 41 Outdoes
- 42 See 25 ACROSS
- 44 Animal rights org.
- 46 Syr. neighbor
- 47 How soon will Bill Gates have Larry Ellison to his house for dinner?

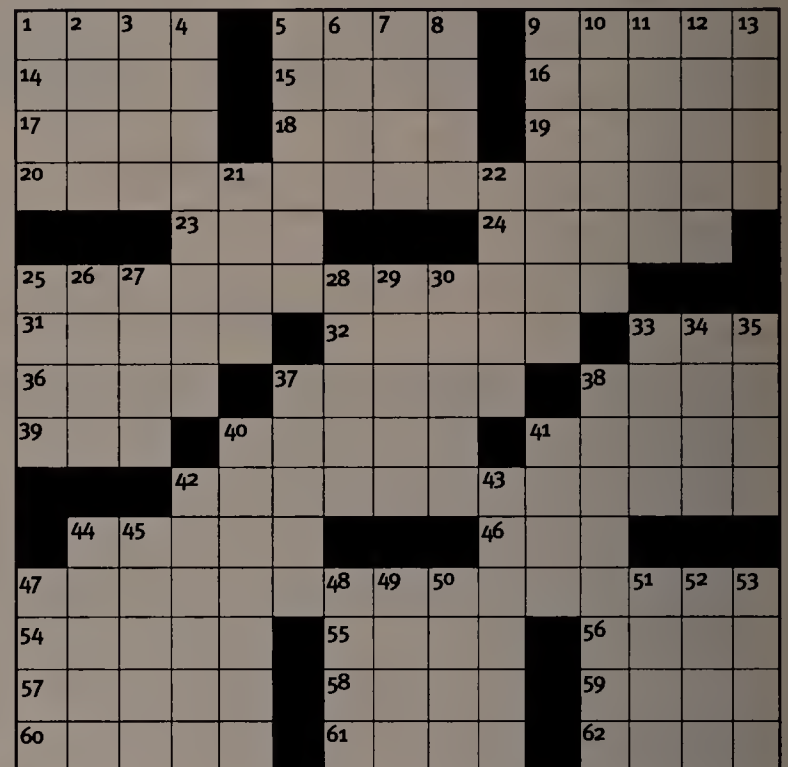
- 54 The most unaccommodating Hilton?
- 55 A voting alliance
- 56 Steve Jobs' 2nd time at bat
- 57 Let up
- 58 X times CLXV
- 59 Supercomputer pioneer
- 60 Titanesses
- 61 La and Au follower
- 62 Web page type

DOWN

- 1 Disk type
- 2 Former dictator ldi
- 3 Alt. Roman 2050
- 4 Computer color tables

- 5 The name of a person for whom something is named
- 6 Intangible quality
- 7 Grump
- 8 War is -
- 9 Clings
- 10 Display rug, for short
- 11 Pythias' pal
- 12 Hooter affirmative?
- 13 Org.
- 21 A certain thing exists
- 22 Refuel a flying object?
- 25 Lacking excess flesh
- 26 Sandwich type
- 27 Subroutine egress point
- 28 Program branch #16?

- 29 Legacy IDMS DBMS
- 30 Specific character-oriented user interface, for short
- 33 Disk interface type, abbr.
- 34 Flight-enabling initials
- 35 Support identification, for short
- 37 Microprocessor debugging support person, for short
- 38 Downsize
- 40 Old PC-accelerator cards
- 41 8, 10 or 16
- 42 Sleep disorder, var.
- 43 Great or vicious
- 44 Cry of discovery



No. 5

Solution on previous page.

rbennet9@tdt.net

- 45 Title start of 14 ACROSS's movie
- 47 Stimulate one's appetite
- 48 CASE company

- 49 Lawyers, abbr.
- 50 Points
- 51 The chance IBM will surprise Bill Gates?

- 52 Rectal or 18 ACROSS
- 53 Eye infection

Inside Lines

Mr. Amelio's Opus

Where can one encounter Oscar nominee Richard Dreyfuss, Brando-busser Larry King, master of mimic Rich Little and Apple CEO Gilbert Amelio all in the same place? Believe it or not, at the Silicon Valley Business and Leadership Conference in June. Sources told us Little is working up a knee-slapping impression of a certain CEO who rocks back and forth, acquires lots of digital art and has a first name that rhymes with "pill."

Full of Joy

Bill Joy, Sun's reclusive research guru, came down from the Colorado mountains last Tuesday to preach the religion of Java at the Patricia Seybold Group's distributed computing conference in Cambridge, Mass. But *explain* Java to the unwashed? Please. Joy was less than impressed after one attendee complained that Sun had done a poor job of spelling out exactly what Java is. "That's not my most critical issue," Joy sniffed. "We're very busy with what we're doing, and [Java] is going to happen anyway. You're going to have Java whether you want it or not."

An Ultra downer

Sun plans next week to cut prices by about 30% on the 64-bit Ultra 1 workstations that it introduced last fall, sources said. That would lower the entry point on the Ultra-SPARC-based machines from \$16,495 to less than \$12,000. Sun is trying to seize the midrange workstation pricing initiative back from Digital, which introduced a \$13,845 box in March.

Yes, but are they delusional, too?

Microsoft is "a tremendously, extremely paranoid company," Jim Allchin 'fessed up at a conference last week. Allchin, general manager of Microsoft's business systems division, said when company executives huddle at off-site retreats, "we sit around and worry about what can go wrong. And that's very good for our health."

Power me up

That Pentium-powered PC just a mite too slow? Power-hungry corporate PC users can migrate to Pentium Pro

soon, as vendors are preparing Pentium Pro desktops in their corporate lines. Dell plans to be one of the first to ship Pentium Pro-powered corporate desktop systems. It will add them to its OptiPlex line in June, sources said.

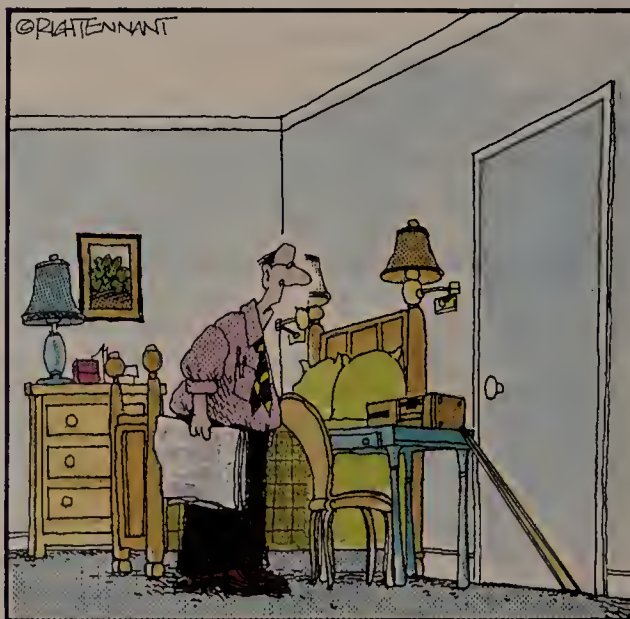
POPware pops out

One-time MapInfo founder — and rock 'n' roll bandleader — Sean O'Sullivan will unveil his new firm, NetCentric Corp., and its new Internet communications software, POPware, next week. POPware was designed to let Internet service providers offer enhanced value-added services and, of course, charge customers accordingly.

Smart Aleck 101

The phenomenal lure of the Internet makes some wax poetic. Take Jim Manzi, CEO of Industry.Net. During the Seybold conference, Manzi quipped that he would soon be teaching an adult education course at Harvard on the existential similarities between "The Love Song of J. Alfred Prufrock" and the "love song of the Internet."

One of our many Internet pen pals passed along "How to Form Your Very Own Silicon Valley Startup," by Laura Lemay (lemay@lne.com). Step 1: Go to Menlo Park, Calif. Find a tree. Step 2: Shake the tree. A venture capitalist will fall out. Step 3: Before the venture capitalist regains his wits, recite the following incantation: "Internet! Electronic commerce! Distributed enterprise-enabled applications! Java!" Step 4: The venture capitalist will give you \$4 million. Step 5: In 18 months, go public. Step 6: After you receive your check, go back to Menlo Park. Find a tree. Step 7: Climb it. Wait. And while you're waiting, why not whip out the old cell phone and pass along a news item or tip to news editor Patricia Keefe, who can be reached at (508) 820-8183 or via the Internet at patricia_keefe@cw.com.



"Mona, this is no way to deal with your chat-line addiction."

THE FUTURE FOR SOFTWARE DEVELOPERS HAS JUST BEEN UPGRADED FROM HOT TO EXTRA HOT

On March 26th, the world of software development tools got its first taste of the future. Cayenne.

Cayenne Software combines the leadership in data-driven modeling and database design of Bachman Information Systems, Inc. and the leadership in structured and object-oriented modeling resident in Cadre Technologies, Inc. Together, they generated revenues of approximately \$70 million last fiscal year.

This fusion offers developers of technical and commercial applications the industry's most impressive range of scalable development tools to work with as they move forward into object-oriented development and beyond. From a global company potent enough to bring real enterprise power tools to distributed and embedded environments.

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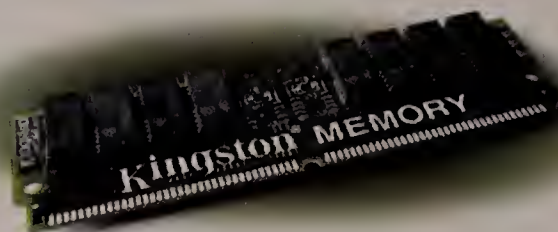


IF ALL MEMORY IS THE SAME,
WHY DO SOME BRANDS FAIL MORE
OFTEN THAN OTHERS?



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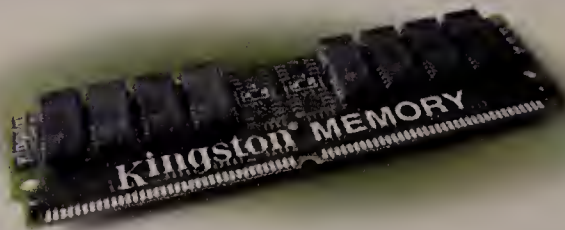


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